

The background is a vibrant yellow with a complex, organic pattern of overlapping circles and lines, resembling a microscopic view or a stylized molecular structure. A large, white, abstract shape, possibly a stylized 'e' or a large oval, is positioned on the left side, partially overlapping the text.

**Lotus**

# **Enterprise Integrator**

**3.1**  
RELEASE

**Domino Connectivity  
and Installation Guide**





Lotus

# Enterprise Integrator

**3.1**  
RELEASE

**Domino Connectivity  
and Installation Guide**

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# Preface

This manual provides information on how to install Lotus Enterprise Integrator (LEI). It also provides reference material for testing and configuring connectivity to supported Connector products.

## Structure of This Manual

This manual consists of two parts:

Part 1 provides information on installing LEI.

Part 2 provides reference material testing and configuring connectivity to supported Connector products.

## LEI Documentation

Documentation for LEI is available as printed books, as well as online in pdf and nsf form.

The supplied LEI documentation set is listed below:

- *Lotus Enterprise Integrator User Guide* — This manual provides information and instruction for using LEI (leidoc.nsf).
- *LEI Domino Connectivity and Installation Guide* — This manual provides LEI installation and configuration instructions. It also provides information on how to set up Domino Connectors, including information about required software and instructions for testing connectivity.

This manual ships as a single book but as two separate .nsf databases (lccon.nsf and leiig.nsf).

- *Lotus Enterprise Integrator Domino Connector LotusScript Extensions Guide* — This manual describes the LotusScript Extensions for Domino Connectors, which can be used in writing scripted sessions for accessing enterprise data (lsxlc.nsf).
- Up-to-the-minute additional information about LEI can also be found at the following Web sites:

[www.lotus.com/dominoei](http://www.lotus.com/dominoei)

[www.lotus.com/developers](http://www.lotus.com/developers)







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# Chapter 1

## Introduction

This chapter provides information about the organization of this manual, related documentation, and an overview of the steps involved in getting started with Lotus Enterprise Integrator (LEI).

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### Organization of This Manual

This manual contains the sections described in the following table.

<i>Section</i>	<i>Description</i>
Chapter 1 Introduction	Chapter 1 contains information about the organization of this manual and terms you should know when working with Lotus Enterprise Integrator (LEI). It includes an overview of LEI, information on how to contact Lotus with LEI questions and suggestions, and basic steps for getting started using LEI.
Chapter 2 Introduction to Installing and Configuring Lotus Enterprise Integrator	Chapter 2 contains an overview and information about installing and configuring LEI on each of the supported platforms.
Chapter 3 Installing and Configuring LEI on Windows Platforms	Chapter 3 contains information and instructions for installing Lotus Enterprise Integrator on Windows.
Chapter 4 Upgrading NotesPump to LEI	Chapter 4 contains instructions for upgrading a NotesPump installation to LEI.
Chapter 5 Installing LEI on UNIX Platforms	Chapter 5 contains information and instructions for installing Lotus Enterprise Integrator on UNIX.
Chapter 6 Command Line Installation for UNIX	Chapter 6 contains information and instructions for installing Lotus Enterprise Integrator using the Command Line installation program for UNIX.
Chapter 7 Installing LEI on the AS/400	Chapter 7 contains information and instructions for installing Lotus Enterprise Integrator on AS/400.

*continued*

<i>Section</i>	<i>Description</i>
Chapter 8 Uninstalling LEI	Chapter 8 contains instructions for uninstalling Lotus Enterprise Integrator on all platforms.
Appendix A Troubleshooting	This appendix contains information for troubleshooting Lotus Enterprise Integrator installation.
Appendix B Restoring LEI After Upgrading Domino or Notes	This appendix explains how to handle problems resulting from a Notes or Domino upgrade after Lotus Enterprise Integrator has been installed.

---

## Related Documentation

### LEI and DECS Documentation

For more information about LEI and related products, refer to the following documents:

- *Lotus Enterprise Integrator User Guide* — This provides information and instructions for using LEI (leidoc.nsf).
- *Lotus Enterprise Integrator Release Notes* — The release notes (readme.txt) contain information about the current release of Lotus Enterprise Integrator that may not be included in the printed documentation. It's a good idea to read the release notes to review any new information.
- *Lotus Enterprise Integrator Domino Connector Connectivity Guide* — This provides information on how to set up Domino Connectors, including information about required software and instructions for testing connectivity (lccon.nsf).
- Additional information about LEI can be found at the following Web sites:

[www.lotus.com/dominoei](http://www.lotus.com/dominoei)

[www.lotus.com/developers](http://www.lotus.com/developers)

### Other Documentation

For more information that you may find helpful, refer to the following documents:

- *Lotus Enterprise Integrator Domino Connector LotusScript Extensions Guide* — This manual describes the LotusScript Extensions for Domino Connectors, which can be used in writing scripted sessions for accessing enterprise data (lsxlc.nsf).

- *Lotus Enterprise Integrator Domino Connector Java Class Library Reference Guide* — The Java LC classes and remote console are not included with this distribution, however they are available for download. You can locate them by choosing the “Lotus Connector Classes for Java” link from the [www.lotus.com/dominoei](http://www.lotus.com/dominoei) main page.
- *Domino Administrator's Guide* — Provides information for configuring and administering a Domino installation.
- *LotusScript Language Reference* — Provides information about writing LotusScript programs. This could be useful if you want to use the LEI LotusScript Extensions to write custom Activities.
- *Additional Domino Connector Documentation* — Lotus Development sells additional Domino connectors for enterprise systems including Enterprise Resource Planning (ERP) and Transaction Processing Systems. Specific documentation about those connectors is included with the connector software and package. You may need documentation for the specific databases, ERP and transaction processing systems that you are using.

---

## Getting Started with Lotus Enterprise Integrator

Listed below are the basic steps involved in getting started with Lotus Enterprise Integrator (LEI).

**Note** Before performing the following steps, read the *Lotus Enterprise Integrator User Guide*.

1. Verify that a Domino Server or Notes Client (Release 4.6 or 5.0 or higher) exists on the local machine.
2. Verify connectivity to a Domino Server (local or remote).
3. Run the LEI Setup program to install LEI.
4. Test connectivity to data source sources you intend to access with LEI. You may need to install appropriate database communications software. This connectivity must be present on the machine to which you are installing the LEI Server.
5. Build Connections using the LEI Administrator.
6. Build Activities using the LEI Administrator.
7. Start the LEI Server.





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## Chapter 2

# Introduction to Installing and Configuring Lotus Enterprise Integrator

This chapter provides an introduction to installing Lotus Enterprise Integrator (LEI), discussing general installation considerations. Specific installation instructions for the Windows and UNIX platforms are presented in separate chapters.

---

### Installation Overview

There are three primary LEI components that may be installed by the Setup program.

- LEI Server
- LEI Administrator (a Notes application)
- LEI Development Client

You either install a server or a development client, not both.

Setup provides you with the three options for installing LEI:

- Create an LEI Cluster and install the first LEI Server  
The LEI Server and an Administrator are created on Domino server.
- Install the Development Client only to an existing Cluster  
The Administrator is created, which has limited functionality.
- Install the LEI Server only to an existing Cluster  
A new LEI Server is installed to an existing Administrator hosted on an accessible Domino Server.

You can install a Development Client on the local machine. When installing an LEI Server, an LEI Administrator database must already exist, or be created as part of the installation. After the first LEI Server is installed and the Administrator database is created, subsequent Server or Client installations can share the existing Administrator.

If a previous version of LEI exists on your machine, or you have a time-limited version downloaded from our Web site, Setup will detect it and you will be prompted to upgrade. If this is what you wish to do, simply follow the on-screen instructions. Alternatively, you may remove the existing Server and then proceed with a normal installation. See Chapter 8, Uninstalling LEI, for more information.

If the current version of the LEI on your machine is the same version as the release you are installing, you must first uninstall the existing installation. See Chapter 8, Uninstalling LEI, for more information.

---

## Special Note to Beta Testers

If you have a beta version of LEI already installed, you cannot upgrade it successfully using Setup. Use the Setup program which came with the beta version to uninstall LEI.

Windows 2000 users must uninstall LEI using Add/Remove programs in the Control Panel.

If you wish, you may simply cut and paste any documents from the beta LEI Administrator to the new Administrator database you install, thereby saving your work.

If a version of NotesPump is on your machine, Setup will detect it and prompt you to upgrade. If this is what you want to do, see Chapter 4, Upgrading NotesPump to LEI. Alternatively, you may use the Setup program that came with NotesPump to first remove that installation, and then proceed with a normal LEI installation.

You do not have to remove your existing NotesPump installation. LEI can co-exist with NotesPump on the same machine.

## The LEI Server

The LEI Server must be installed on a machine where native Notes program modules are already installed. This may be a Notes Client or a Domino Server. Only one LEI Server can be installed on any single machine. In addition, appropriate database communications software (Oracle SQL\*NET, DB/2 CAE, ODBC, etc.) must be installed on that same machine to enable communications with the desired data sources. See the *Lotus Enterprise Integrator Domino Connector Connectivity* section for specific database software requirements.

LEI Server operations require access to the notes.ini file located on that system.

**Note** LEI is not supported on partitioned servers.

If Setup cannot find a local Notes Client or Domino installation required by LEI, it will issue an error message.

## The LEI Administrator

The LEI Administrator is a Notes application, requiring a Notes Client release 4.6 or later. It is accessed and used by one or more LEI Servers and Clients, as well as authorized Notes users, and is a required component of all LEI installations. Setup requires that the LEI Administrator be hosted on a Domino Server. The Domino Server hosting the Administrator must be accessible to the local machine.

Setup always provides the option to create a new Administrator or use an existing Administrator when installing a new LEI Server or Client. This is termed a “Cluster” in LEI.

- If you are creating a **new** Administrator database, you must have the appropriate access to create databases on the target Domino Server. The setup option is “Create New Cluster”.
- If you are installing to an **existing** Administrator database, you must have appropriate access privileges to create documents in that database. The setup option is “Install into an Existing Cluster”.
- For more information, see “How to Set up Administrator Security,” later in this chapter.

## The LEI Development Client

The LEI Development Client provides a subset of the functionality provided by the Server. It must be installed on a machine with a Notes Client Release 4.6 or greater. It allows you to use the database browsing capabilities found within the LEI Administrator. This gives you the ability to develop activity and connection documents in the Administrator database that can then be executed by an LEI Server. A Development Client also provides the needed support files to enable LEI LotusScript development on a Notes Client. Please note that appropriate database client software must also be installed for the data sources you plan to access (Oracle SQL \*NET, DB/2 CAE, ODBC, and so on).

An LEI Development Client must be installed into an existing Administrator database. See your licensing agreement for the number of development clients that you can install.

## The LEI Cluster

“LEI Cluster” is a common term used throughout the LEI documentation and during Setup. It simply describes one or more LEI Servers and Clients sharing a single Administrator database. A single Administrator database can have many Servers and Clients, but a Server or Client can only use, or be installed into, a single Administrator database. A Cluster also includes the LEI Log database. The optional Script Vault database and Documentation databases are also considered to be part of the Cluster.

Setup handles all aspects of Cluster installation when creating an Administrator database and installing an LEI Server. Consult the *Lotus Enterprise Integrator User Guide* for details about the LEI Administrator and the other databases in the Cluster.

---

## How to Set Up Administrator Security

The LEI Administrator uses security features available with Lotus Notes, such as encryption and true ACL author access. Since several types of users can use LEI, it is important to take some time to plan the security implementation. We recommend that one person — or a group of people — be designated as the LEI Administrator Managers.

This person or group will be responsible for installing LEI and editing Configuration documents. Using the security features of Lotus Notes (such as ACL author-level privileges), these documents can be made inaccessible to other users.

Encryption of database passwords is an important part of LEI’s security features. All password fields are encryption enabled. Encryption keys for each form must be made and added to each LEI Server’s ID as well as to anyone’s ID who may need to see or make changes to the encrypted fields or to the document itself. Those users who do not have the encryption key may still view the document but will not see any data in the encrypted field. The encrypted field remains blank. Additionally, users without the encryption key will not be able to edit the document.

The LEI Administrator provides author privileges at the document level. Each LEI document has an action button in the action toolbar that accesses the author privileges list.

Another part of security is reader access. When the encryption button is pressed from within a document in the LEI Administrator, the first part of the dialog displayed is the reader access list. Disabling the option “Who can read this document: All readers and above” and picking names from the list below will only allow those people whose names have been chosen to see the document. No one else will be able to view the document, including the document’s author, if their name has not been chosen as part of the list.

Please see the *Administrator’s Guide* for Lotus Notes and the *Database Manager’s Guide* for more detailed information on Lotus Notes security features.

## Setting Up Notes IDs to Run LEI

Before the LEI Administrator and Server can be used, you must set up proper Notes User IDs and Access Control Lists.

- The LEI Notes User ID must have access to all data that LEI will be accessing on Domino Servers. For these reasons, any LEI Server accessing sensitive Notes data should observe the same physical access restrictions as Domino Servers.
- On R5 systems, LEI will initially be set up to use the server ID. If only the Notes Client is installed, it will use the Notes user ID. If you do not want LEI to use the server ID, see the next section, “Running LEI and Domino on the Same Machine”.
- Because the LEI Administrator and Log databases are created on a Domino Server, the Notes User on the machine where LEI is being installed must have Create Database and Delete Database authorization on the Domino Server before installation is started. With R5 systems, Setup will be using the server id, so this ID must have the appropriate privileges. If the Cluster databases are being created on the local Domino Server, this won’t be an issue.
- When creating an LEI Cluster, Setup automatically sets the Administrator and Log database ACLs to include the Notes ID used by Setup with Manager Access. Other Managers can be optionally added during Setup. After Setup is complete, the default access to the Administrator and Log databases will be set to Manager. It’s important to open the Administrator and Log database and configure the ACL to meet your security needs.
- Users who create Connector and Activity documents should be given Author access to the LEI Administrator databases. Editor access to an Activity document is necessary for running Activities and using agents or actions on the document — such as the agent executed by the Run ASAP button in the Action toolbar.

- If the copy of Notes installed on the LEI Server has a password-protected ID, the administrator will need to supply that password each time the LEI Server is started or performs a data transfer Activity. It's not necessary to remove this protection, however, if the Notes option "Share password with Notes add-ins" is enabled.

To enable shared passwords, complete the following steps:

1. From the Notes Client menu, choose File — Tools — Userid.
2. Enter your password when prompted.  
A dialog box appears.
3. Enable the option "Share passwords with Notes add-ins."
4. Click Done.

**Note** You must grant permission to "\*" to execute unrestricted LotusScript agents. Also "Default" must have Editor access to the LEI Administration database with permission to delete documents.

---

## Running LEI and Domino on the Same Machine

To run LEI and a Domino Server on the same machine while using different IDs for the Notes Client (LEI) and the Domino Server, make the following changes in the notes.ini file.

1. Add the following line to the notes.ini file:

```
ServerKeyFileName = SERVER.ID
```

where SERVER.ID is the name of the Domino Server ID.

2. Edit the existing line (which will probably be pointing to the server ID) as below:

```
KeyFileName = USER.ID
```

where USER.ID is the name of the ID you want to use for LEI and the Notes Client.

This will cause the Notes Client to prompt for the USER.ID each time you invoke Notes and the Domino Server to use the SERVER.ID.

**Note** For more information about using the Notes Client on a server, and how the last ID used by the Client is registered and then used the notes.ini file, access the following chapters and search for the term "add-in":

- Chapter 3 "Installing and Configuring LEI on Windows Platforms"
- Chapter 5 "Installing and Configuring LEI on UNIX Platforms"

---

# LEI.INI Settings

This file provides important initialization information to LEI and is created by Setup in the same directory where the program files are copied. With the exception of the keys noted below, this file should not be altered or moved. The NativeText and CenturyBoundary keys can be added manually to the initialization file for users who have special needs. Consult the user’s guide for more information about these keys.

The section heading in the lei.ini file is [Configuration].

The entries are the following:

<i>Version</i>	<i>LEI build number</i>
Enterprise Integrator	LEI Server name
AdminServer	LEI Administrator Domino Server
AdminDatabase	LEI Administrator Notes database file path and name
Directory	LEI working directory
LEIDirectory	LEI program directory (same as Directory on non-Unix platforms).
KitType	1 = Client 2 = Server
Translation	0 = Disabled 1 = LMBCS only 2 = Enabled
RemoteConsole	0 = Remote Console applet connections are refused. 1 = Remote Console applet can only monitor LEI activity and status. 2 = Remote Console applet can fully control an LEI Server, including closing Activities and Server shutdown.
NativeText	Set to the suffix of an LEI text stream format. For example, LCSTREAMFMT IBMCP932 indicates code page 932. Add the following “NativeText=IBMCP932” to force LEI to use that character set as native. The LEI user guide describes all native text functions.
CenturyBoundary	If the year is less than the boundary number, then the century 2000 will be used. If greater than or equal to the boundary, the century is 1900. If the boundary number is 101, then LEI uses the current century. The default boundary is 50. Zero always means 1900 and 100 always means 2000.

Translation and RemoteConsole are reset to the value in the Server Configuration document by the Reconfigure option or server periodic broadcast.

## Example of LEI.INI

Shown below is an example of a typical lei.ini file. Much of the lei.ini file is derived from the choices you make when installing LEI using the supplied Setup program.

```
[Configuration]
Version=55.40
LEI=LEIServer
KitType=2
AdminServer=NotesServer
AdminDatabase=leiadm.nsf
Directory=C:\NOTES\
LEIDirectory=C:\NOTES\
Translation=1
RemoteConsole=1
CenturyBoundary=65
```

**Note** The CenturyBoundary entry is not created by Setup. It can be manually added. See the *Lotus Enterprise Integrator User Guide* for more information.

---

## Note for Users of Non-Eng Based Character Sets

If you use a non-Eng based character set, you may need to change the font that Setup uses. This only applies to you if you are using the graphical version of Setup on UNIX. By default, Setup uses the following helvetica-medium-r-normal font when installing on UNIX:

You can override the default font by setting the environment variable LCSETUPFONT equal to the new font name using the command:

```
set LCSETUPFONT=FontName
```

In a korn shell, you can use the following statement:

```
export LCSETUPFONT=font-name
```

After identifying the font, run the Setup program, which will then use that font.



---

## Chapter 3

# Installing and Configuring LEI on Windows Platforms

This chapter provides information and instructions for installing LEI on Windows platforms.

---

### System Requirements

#### Hardware Requirements

- Processor: Intel systems 486 or higher
- Memory: Minimum 48 MB RAM; 64 MB or more recommended
- Disk Space: 30 MB of disk space

#### Software Requirements

##### LEI Administrator:

- Notes Release 4.6x or later

##### LEI Server and Development Client:

- Windows NT version 4.0 with service pack 5
- Windows 95/98/2000
- Notes Release 4.6x or later

---

### Installing LEI on Windows Platforms

This section provides an example of installing an LEI Server into a new Administrator database on the Windows platform. This installation process creates a new Administrator and its associated databases and also “installs” the Server into the new Administrator. This effectively creates the “Cluster.” Subsequent Enterprise Server or Client installations can share the same Cluster.

If a previous version of LEI exists on your machine, or you have a time limited version downloaded from our Web site, Setup will detect it and you will be prompted to upgrade. If you choose to proceed with an upgrade, the LEI program files and Cluster databases will be upgraded to the new

version. Alternatively, you may uninstall the existing Server and then proceed with a normal installation as described in this chapter. See Chapter 8, “Uninstalling LEI.”

**Prior to the next Release of Domino (and DECS 5.0.5), if you reinstall or upgrade Domino with DECS after installing LEI 3.1, you must reinstall or restore LEI.**

For more information, see the following two websites:

[www.lotus.com/dominoei](http://www.lotus.com/dominoei)

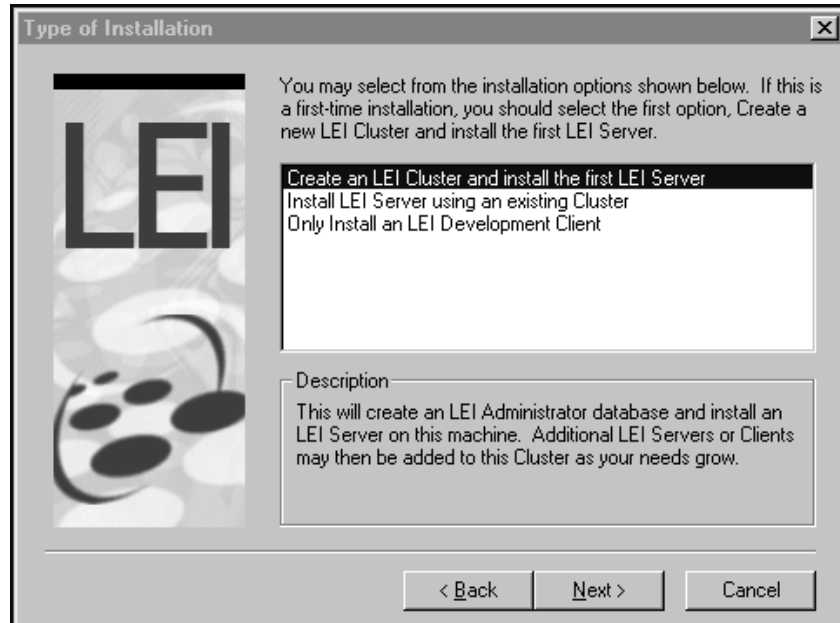
[www.lotus.com/developers](http://www.lotus.com/developers)

## LEI Installation Procedure

1. Run Setup from the LEI CD-ROM. The following screen appears:



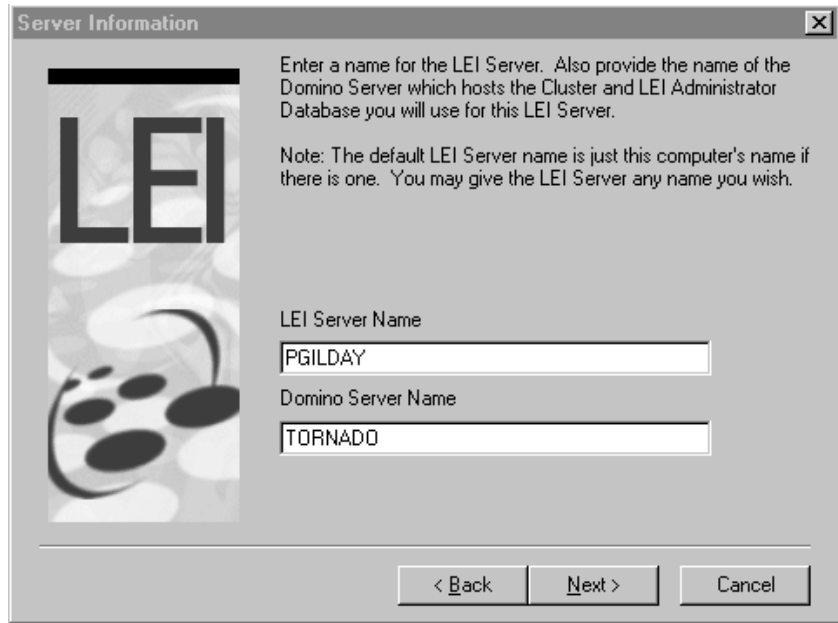
2. Click Next to continue with the installation. The installation options screen appears, as shown below.



This example uses the option “Create an LEI Cluster and install the first LEI Server.” The cluster databases, which include the LEI Administrator database, will be installed on the Domino Server chosen later in the setup process. If you select another installation option, a brief summary of that option appears in the Description box. You can go back and change your selections at any time.

**Note** If you already have created an LEI Cluster as part of a previous LEI Server installation and want this server to use the same Administrator, select “Install LEI Server using an existing Cluster.”

3. Click the “Create a new LEI Cluster and install the first LEI Server” option. The following screen appears when you select this option.



**Server Information**

Enter a name for the LEI Server. Also provide the name of the Domino Server which hosts the Cluster and LEI Administrator Database you will use for this LEI Server.

Note: The default LEI Server name is just this computer's name if there is one. You may give the LEI Server any name you wish.

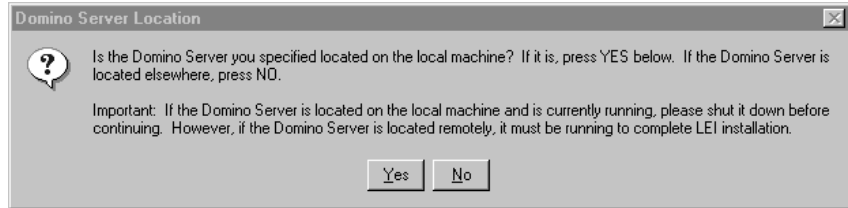
LEI Server Name  
PGILDAY

Domino Server Name  
TORNADO

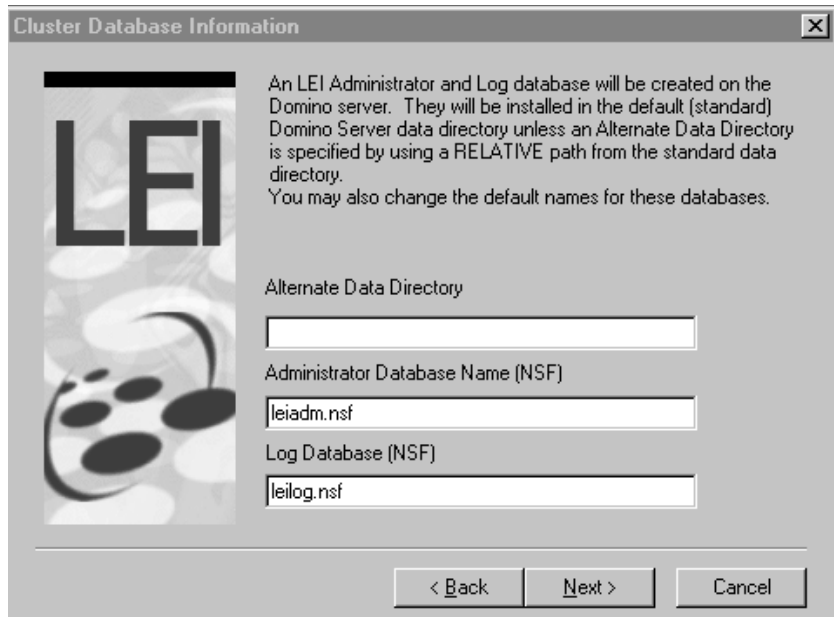
< Back   Next >   Cancel

4. Enter a name for the LEI Server you are installing. The default name will be the name of your computer if it is detected, but you can change it to whatever name you wish.
5. Enter the name of the Domino Server that will host the LEI Administrator. Remember, this server must be accessible and running if located remotely.  
**Note** In some instances, you may wish to perform a “local” database installation for the Cluster databases. If you choose this option, the LEI databases will be installed on the local Domino Server. You may specify “local” as the server name if you are installing to a Domino server on the local machine. Local install to a Notes client is not supported.
6. If you are installing to an **existing** Cluster, enter the name of the Domino Server hosting the LEI Administrator you wish to use.

7. If you entered any name except “local” for the Domino Server, the following screen will appear. If the Domino Server you specified is on the local machine press Yes, otherwise press No.



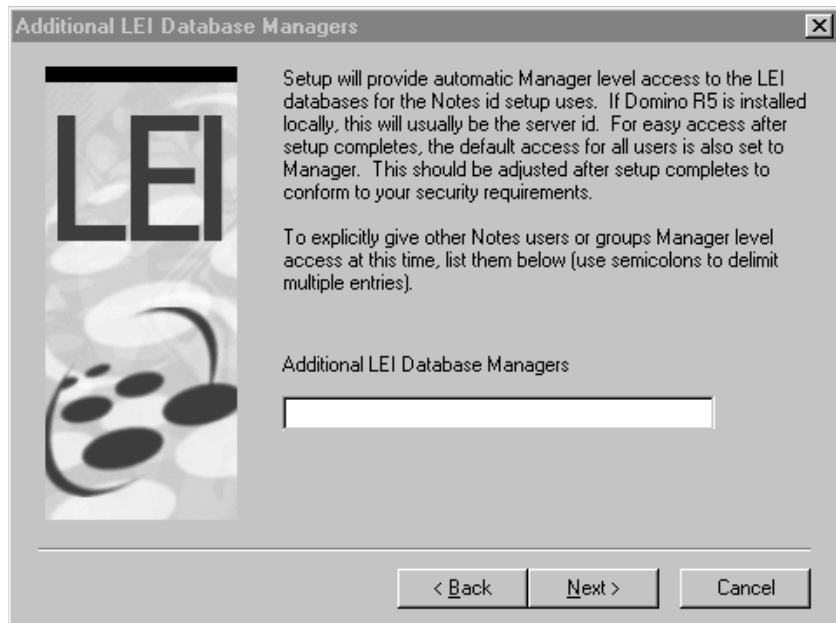
8. After answering Yes or No, in the previous step, the following screen appears.



- On this screen you may change the default file names for the Administrator and Log databases. These databases are always installed as part of creating a LEI Cluster. By default, all databases are created in the standard data directory.
- You can specify an Alternate Data Directory by providing the RELATIVE path from the standard data directory. This directory cannot be on another drive. For example, if your Notes data directory is c:\notes\data and you want to place the LEI databases in c:\notes\data\LEI\31, you would specify LEI\31 in the Alternate Data Directory box. Leave it blank to specify the standard data directory.

**Note** Please note that these databases should not be moved after installation.

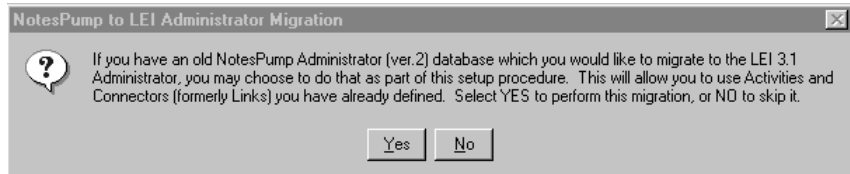
- If you are installing the LEI Server to an existing Cluster, specify the name of the existing Administrator database. Use the Alternate Data Directory to specify the relative path to the Administrator if it is not located in the standard data directory. You can use a Notes Client to access the database and open the database Properties to verify the file name and location of the Administrator database. Remember, you must have sufficient Access privileges to be able to create documents in the Administrator database for the installation to succeed.
9. Click Next, the following screen appears.



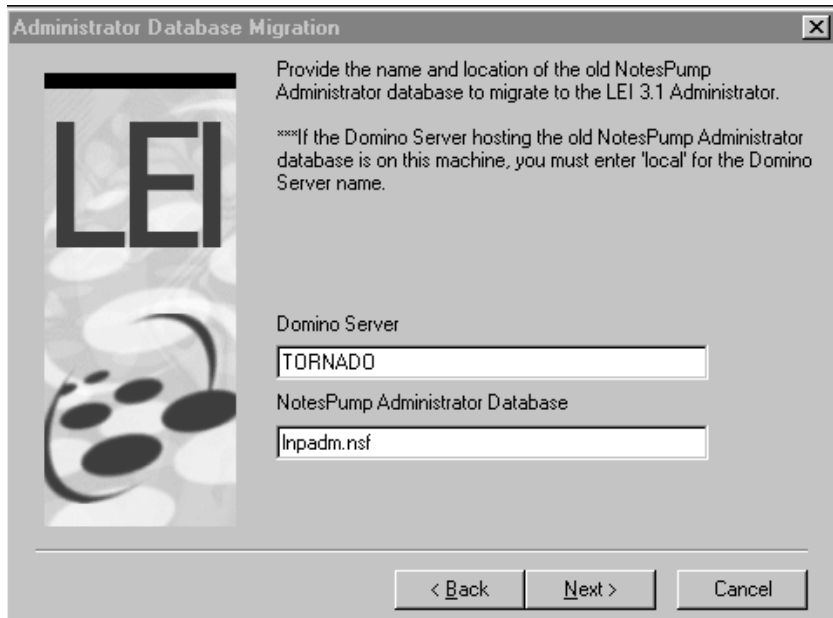
10. The Notes ID that you use while running Setup is entered in the ACL for all the LEI databases created by Setup. The default Access given is Manager. If there are any other users or groups you wish to grant Manager access to at this time, you may do so here. Enter valid semicolon-delimited Notes IDs here. You can also add additional users after Setup is complete by manually editing the ACLs. Consult "How to Set up Administrator Security" in this guide.

**Note** If the Notes ID you use to access the databases after Setup is complete is NOT the same one you use during Setup, add that Notes ID to the Additional LEI Database Managers box now.

11. Click Next; the following screen appears. This option allows you to perform a migration of an old NotesPump Administrator database as part of this LEI Server Installation. The new LEI Administrator will be populated with the contents of the NotesPump Administrator after it is created. This will allow you to access and use Connections (formerly Links) and Activities you have already defined. See Chapter 4, “Upgrading NotesPump to LEI”, for more information concerning NotesPump Administrator migration.



12. If you chose Yes to step 11, the following screen appears. If you choose No, you will not see this screen.

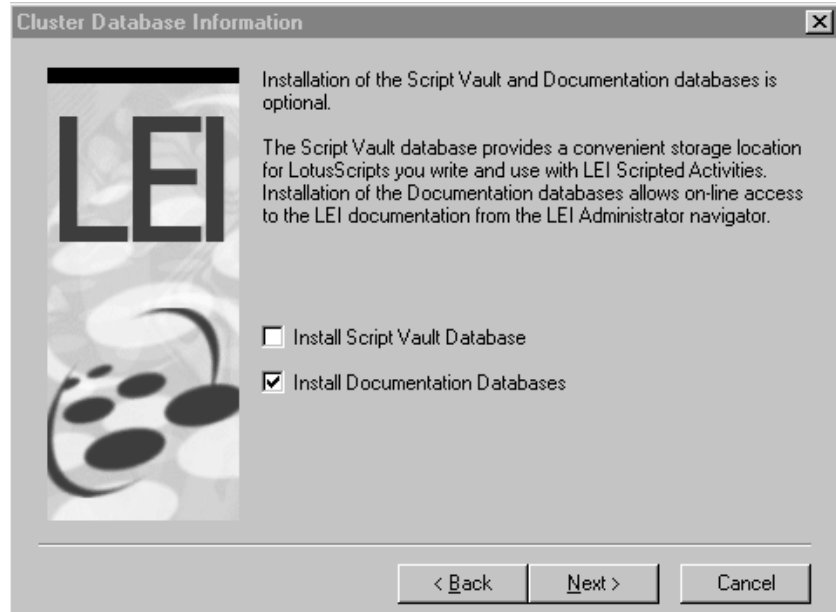


13. Enter the name of the Domino Server hosting the old NotesPump Administrator database. If it is on the local machine, you must enter “local”. If the Domino Server is located remotely, it must be up and running and accessible.

14. Enter the name of the NotesPump Administrator database. If it is in a directory other than the standard data directory, specify the RELATIVE path to that directory. For example, if it is in c:\notes\data\ei\30, you would enter ei\30\lnpadm.nsf. You must have sufficient access to this database to be able to open and read documents.

**Note** If migration does not succeed, a warning will be issued but it will not prevent this LEI installation from succeeding.

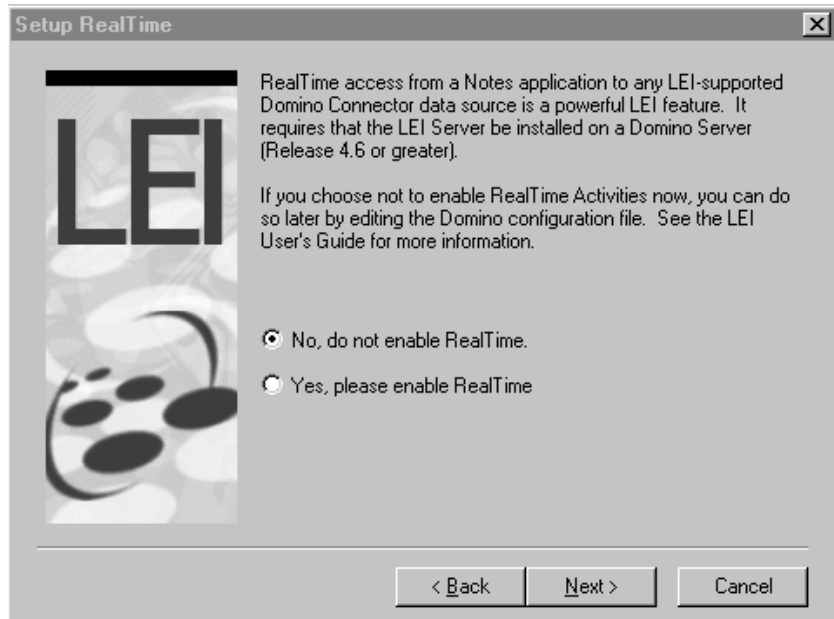
15. Click Next to continue; the following screen appears. Installation of the Script Vault and Documentation databases is optional.



- The Script Vault may be used as a general repository for scripts that you use with LEI Scripted Activities.
  - The Documentation databases are listed below:
    - Lotus Enterprise Integrator User Guide (leidoc.nsf)*
    - Lotus Enterprise Integrator Domino Connector LotusScript Extensions Guide (lsxlc.nsf)*
    - Lotus Enterprise Integrator Domino Connectivity Guide (lccon.nsf)*
    - Lotus Enterprise Integrator Installation Guide (leiig.nsf)*
16. Make your selections and click Next to continue. The Setup RealTime screen is displayed.

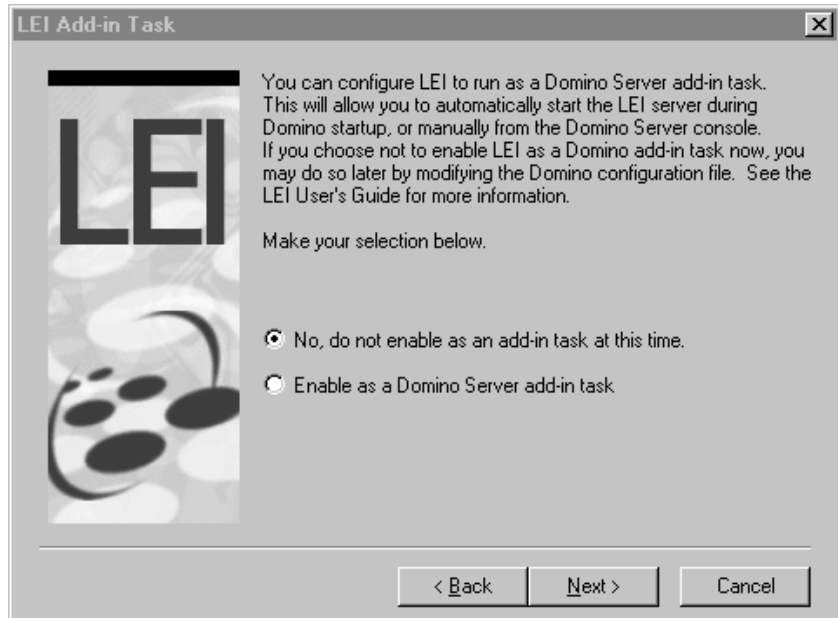


Realtime functionality can be manually configured at a later time if desired. Consult your user guide for more information on setting up and using Realtime.



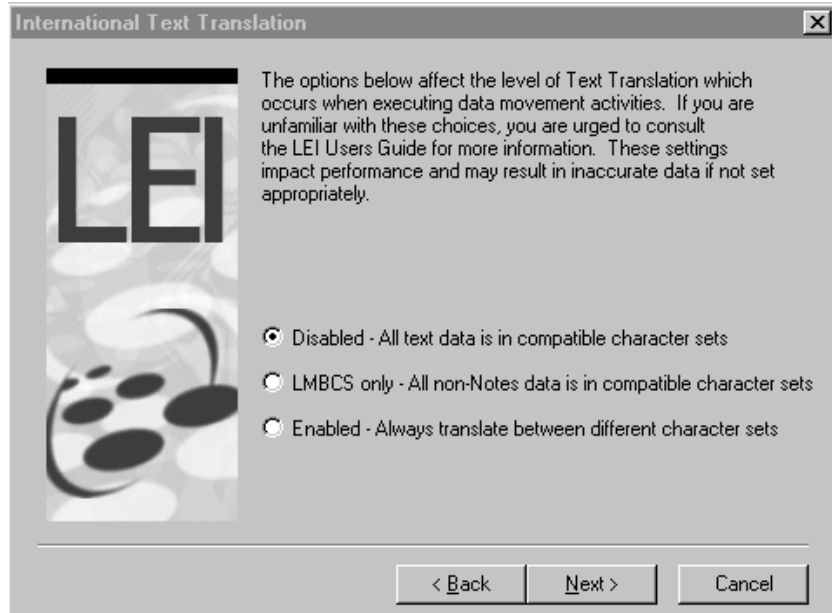
17. Click Next to continue. The LEI Add-in Task screen appears:

Do not enable LEI to run as an Add-in Task if your local system only has a Notes Client. Enabling LEI as an Add-in Task will allow the LEI Server to load and start automatically when the host Domino Server is started. The Add-in Task configuration can be done at a later time if desired.



**Note** When LEI is installed as an add-in task, it uses the KeyFileName entry from the notes.ini file to obtain the ID file — regardless of whether the server itself uses the ServerKeyFile or KeyFileName parameter. As a result, LEI uses the ID last used by the Notes Client on the server. As a workaround, each time you use the Notes Client on the server, switch back to the LEI ID before closing the Client.

18. Make a selection and click Next to continue. The International Text Translation screen appears. Choose the level of text translation for this LEI Server.

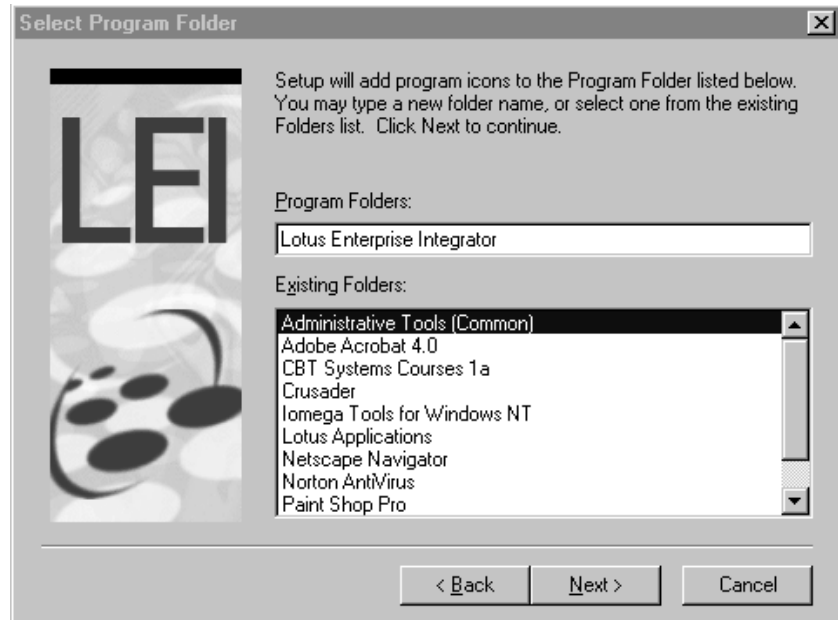


There are three choices for International Text Translation.

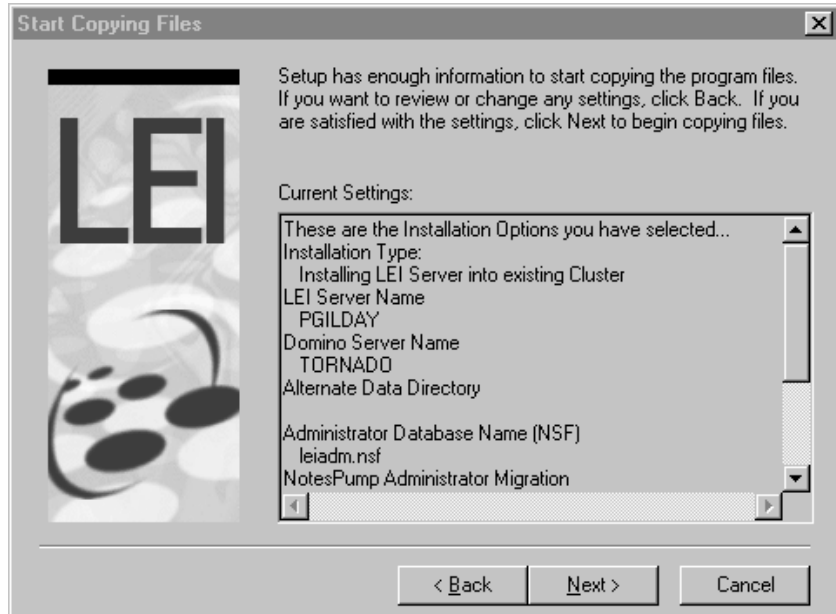
- If data is going from a source in one language to a destination in another language, turn on Full Translation.
- If it is going to a Notes database on one end, LMBCS will cause less overhead and will be sufficient.
- If source and destination are in the same language and what the data looks like in Notes is not an issue, you can leave International Text Translation disabled for optimum performance. This setting can be changed at a later time through the Server configuration document in the Administrator.

For more information on Text Translation, see the *Lotus Enterprise Integrator User Guide*.

19. Click Next to continue. The Select Program Folder screen appears. Enter a name for the LEI program folder. Select an existing folder or accept the default.



20. Click Next. The following screen appears, showing a summary of the installation options and selections that you have made. To change any options, click Back in order to page back and make changes. If the selections are correct, click Next to install LEI.



Setup will now copy all LEI Program files and create the lei.ini file in the Notes program directory. The Administrator database and other Cluster databases will be created on the Domino Server you specified. If you are installing into an existing Cluster, the Administrator database will be opened and a LEI configuration document will be created for the new Server.

- When Setup is complete it may prompt you to re-boot your computer. This **MUST** be done before attempting to use LEI in any capacity.
- If you configured the LEI Server to run as an add-in task, it will start when you re-start the Domino Server.
- If a local Domino Server is hosting the LEI Cluster databases, you must re-start Domino (it should have been shut down prior to running Setup) before starting the LEI Server.

### **Special Note for R5 installations**

By default, Domino R5 installation creates separate directories for the Domino Client and Server. It is also possible for Domino 4.6.x installations to be installed this way. If you are installing to a systems with this type of configuration, the LEI files and lei.ini will be placed in the Server directory.

The PATH should have been properly configured to include the Server directory prior to running Setup.

### **If Setup Is not Successful**

If Setup does not complete successfully it will display an error message screen.

1. Examine the error message. It will provide valuable information about what went wrong.
2. If the error is easily correctable, such as a misspelled Domino Server name, you can just click Yes and then click Back to step back through-out the Setup dialog screens to the point where the error occurred.

**Note** If the error cannot be resolved at this time, press No. Setup will remove any components it successfully installed and terminate.

3. Correct the error using the appropriate Setup dialog screen.
4. Keep selecting Next to repeat the Setup process.

---

## **Running LEI as a Windows NT Service**

This section provides information on configuring LEI to run under Windows NT. Some of these configuration items are optional.

### **Installing LEI as a Windows NT Service**

After installing and verifying that LEI runs, you may want to configure LEI to run as a Windows NT Service. This is useful if you want LEI to start automatically whenever the machine is started, or if you want to configure LEI to run continuously even if you log out of Windows NT.

LEI can be added and removed as an NT service. As an NT Service, LEI will automatically start up when the NT server is started. To do this after LEI has been installed, execute nlcservc.exe from a Command window in the Domino program directory.

Follow the prompts after entering either of the following:

```
nlcservc install
nlcservc remove
```

This should be done by a user with NT Administrator privileges.

**Note** If the Domino server starts as an NT service, to avoid sequencing problems LEI should be added as a Domino Server Addin Task. This ensures that Domino starts before there is an attempt to start LEI. See Chapter 2 in the *Lotus Enterprise Integrator 3.1 User Guide* for information about running LEI as a Domino Addin Task.

To configure LEI as a Windows NT service, complete the following steps:

1. Start a Command Prompt window.
2. At the command prompt, change to the LEI directory (usually the Domino or Notes directory).

```
cd \Notes
```

3. Execute the command NLCSEVVC with the install parameter:

```
nlcsevc install
```

These steps install LEI to run as a Windows NT Service. The service is initially configured as Manual Start.

### **Configuring LEI for Autostarting at Windows NT System Start**

If you want, you can set up the LEI service to start automatically at System Start by doing the following:

1. Start the Control Panel.
2. Double-click the Services icon.
3. Select "Enterprise Integrator - Manual" and then click Startup.
4. Select "Automatic" as the startup type. Verify that "System Account" and "Allow Service to Interact with Desktop" are selected.
5. Click OK.

LEI is now configured to automatically start when Windows NT starts.

6. Click Start to start LEI or click Close to exit.

Once LEI is configured to run as a service, you cannot run it from the command line. You must start it as a service from either the Control Panel - Services or with the "net start" command ("net start Enterprise Integrator"). LEI will make entries in the Windows NT Event Log upon startup and shutdown.

### **Removing LEI as a Windows NT Service**

You can remove the LEI Service using the following procedure:

1. Start a Command Prompt window.
2. At the command prompt, change to the Notes directory:

```
cd \Notes
```

3. Execute the Command NLCSEVVC with the remove parameter:

```
nlcsevc remove
```

**Note** This procedure does not uninstall LEI, it only removes the LEI Service from Windows NT. After removing it as a service, you must then start LEI from the command prompt in order to run it.

## **Connectivity Tests with User or System Accounts**

When running the Connectivity Tests described in the *LEI Domino Connectivity and Installation Guide*, be aware of the following:

If LEI is set to log in as a specific user account, log on to NT with that account to perform your connectivity tests. If LEI is set to log on as a System account, all required DBMS Client software must be accessible through the System path.

Since the local System account does not have access to network drives, anything following the first network path in the System path will be ignored, so make sure that the DBMS Client directories are in the System path before any network drives. In order to perform your connectivity tests through the System account, you can perform a start cmd.exe through an LEI Command Activity. Doing so creates a command prompt with the same path and environment as the LEI service.

## **Considerations When a Notes/Domino Server is Started as an NT Service**

When a Notes/Domino Server is started as an NT Service, Notes/Domino users cannot access database or directory links that are at locations other than the local NT Server. Applications installed as a service begin execution before you are prompted to log in at the NT Server.

If Notes/Domino is installed as a service, mapped drives that the NT server may have set up are not yet reconnected at the point when the Notes/Domino Server is started. The Notes/Domino server will only recognize drives that are available when it is first started. Any drives that are mapped after Notes/Domino server has started are not recognized. Therefore any directory/database links that point to mapped drives on other computers will not function properly if Notes/Domino Server is started as a service.

The solution for this is to not install Notes/Domino as a service.

When Notes/Domino is not installed as a service, but is launched from the Start menu or from a Desktop Shortcut, you must be physically logged in at the NT Server. Because you must log in at the server, all network drive mappings will have been established when the Notes/Domino server was launched. Directory/database links that are beyond the local server function correctly.



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## Chapter 4

# Upgrading NotesPump to LEI

This section provides instructions for upgrading a NotesPump installation to LEI on all platforms.

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### Overview of Upgrading NotesPump to LEI

If you have NotesPump installed, the LEI Setup program will detect it and prompt you to either upgrade the existing NotesPump installation or perform a fresh LEI install.

**Note** All the requirements and considerations in performing a normal installation apply to performing a NotesPump Upgrade. A NotesPump upgrade is a LEI installation that preserves some of your old NotesPump settings, and also involves a migration of the contents of the NotesPump Administrator database to an LEI Administrator database.

**Note** For more information, see the section on installation in Chapter 3 for Windows platforms or Chapter 5 for UNIX platforms.

If you choose to upgrade NotesPump, the new LEI Server or Client will use several of the old NotesPump settings. For example, if the Text Translation setting for your NotesPump Server installation was set to “LMBCS only” and the Poll Interval was set to 15 seconds, these settings will be preserved in your new LEI Server.

**Note** The new LEI Server or Client will use the same name in the new LEI Administrator as in the NotesPump Administrator. It cannot be changed.

Because a successful migration of the NotesPump Administrator is an integral part of the upgrade procedure, Setup will display an error message if the migration cannot complete successfully. Examine any reported errors or warnings carefully. If the error can be easily resolved, such as a misspelled Domino Server name, Setup will allow you to step back to the screen where you can fix the error and try again.

**Tip** The steps involved in upgrading NotesPump after making the initial choices, described above, are almost identical to a normal install. See the chapters on Installing LEI for your particular platforms for a description of each Setup screen. Because upgrading preserves some of the old NotesPump settings, some screens are skipped.

If you wish to migrate your old NotesPump Administrator, select to migrate your old NotesPump Administrator when the Setup program prompts you. When the upgrade is complete, your LEI Administrator will contain all the Activity documents, Connection (formerly Link) documents, and Server configuration documents which existed in the old NotesPump Administrator. The Server configuration documented for the upgraded server is marked as enabled. All the other Server configuration documents migrated to the new LEI Administrator are initially marked as disabled. They will be enabled if and when those servers are upgraded.

You CANNOT continue to use the old NotesPump Administrator for the new Server.

Please note the following about the upgrade process:

- The upgrade process is non-destructive. Your old NotesPump Server and Administrator database are left completely intact and should work as before.
- The time required to migrate depends on the size of the NotesPump Administrator database and whether it is local or remote. It may take several minutes to an hour or more.
- If you are upgrading multiple NotesPump servers, each server upgrade will need to be done individually by running the installation program and selecting the upgrade option.
- Be aware that after an Administrator migration, you will have essentially two copies of every activity: the one in the NotesPump Administrator and the new copy in the LEI Administrator. If you still have an active NotesPump server running NotesPump Activities, it is possible that an active LEI server could rerun the same Activity from the LEI administrator after the Administrator migration. For this reason, if activities were previously scheduled in the NotesPump Administrator, they are initially disabled in the LEI Administrator. To re-enable activities when you are ready to run them with LEI, click “Enable Activities” from the Actions menu.

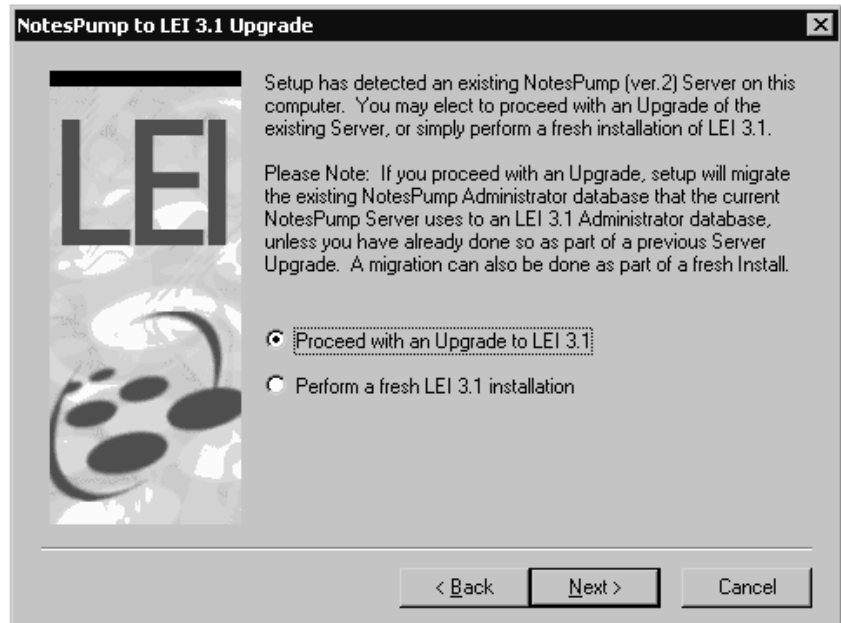
**Note** Activities that were previously set to “Restrict to Schedule” will now be set to “Enabled.”

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## Migrating NotesPump to LEI on Windows Platform

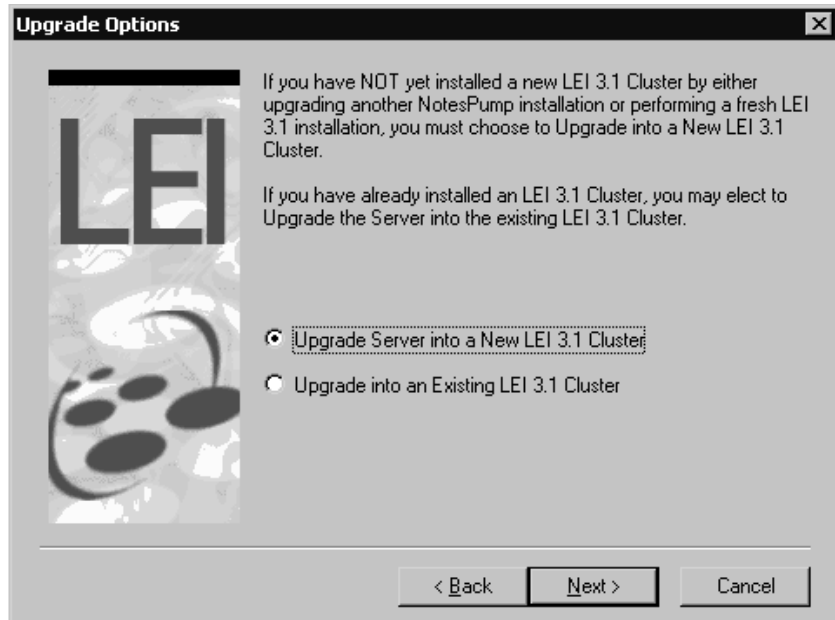
This section describes how to properly upgrade an existing NotesPump installation to an LEI installation. The example assumes that this is the first, or only, NotesPump Server to upgrade in a particular Cluster. The steps to perform the Windows-based upgrade are functionally equivalent with those for UNIX, although the screens may differ in appearance.

1. After the initial Welcome and license screens, you will see the following screen if Setup detects an active NotesPump Server or Client installation.



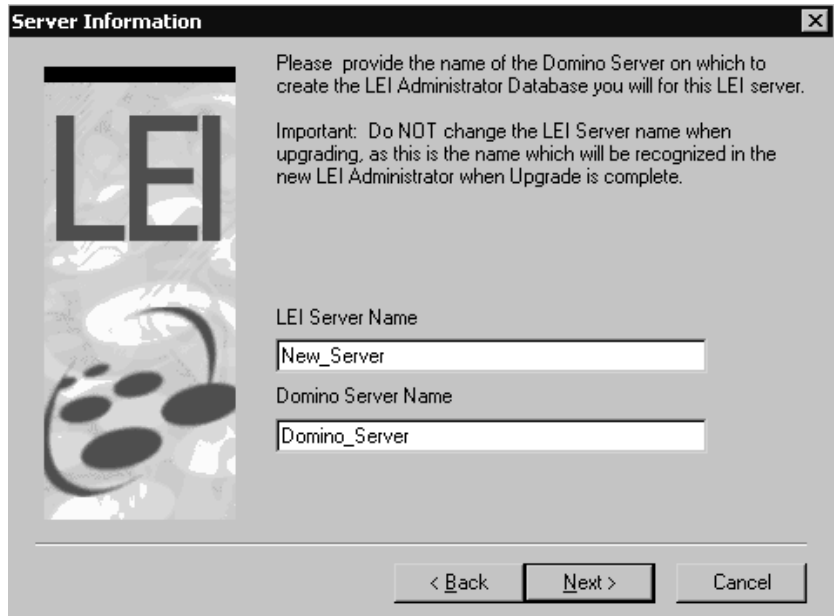
You may elect to proceed with an upgrade or simply perform a normal or 'fresh' installation of a new LEI Server or Client. If you choose to perform a fresh installation, see the chapter on Installing LEI for you particular platform.

2. Select “Proceed with an Upgrade to LEI” and the following screen appears if you are upgrading a Server. If you u a Client, the following screen is skipped.



If you have not yet created a new LEI Cluster, you must do so now as part of this upgrade. However, if you have already created an LEI Cluster, either as part of a previous Server installation or upgrade, you may select to use the existing Cluster.

3. Choose “Upgrade Server into a New LEI Cluster.” The following screen appears.

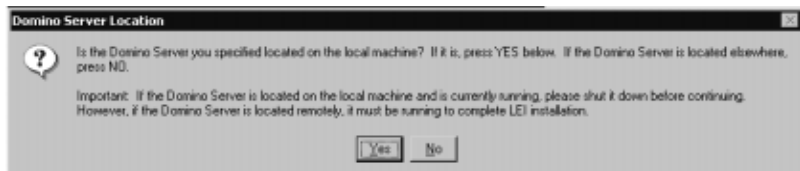


The LEI Server name provided is the same as the old NotesPump Server name. Do not change this name. The Domino Server name given is the same as the Server hosting the old NotesPump Cluster. Change the name if you will be creating the LEI Cluster on a different Domino Server.

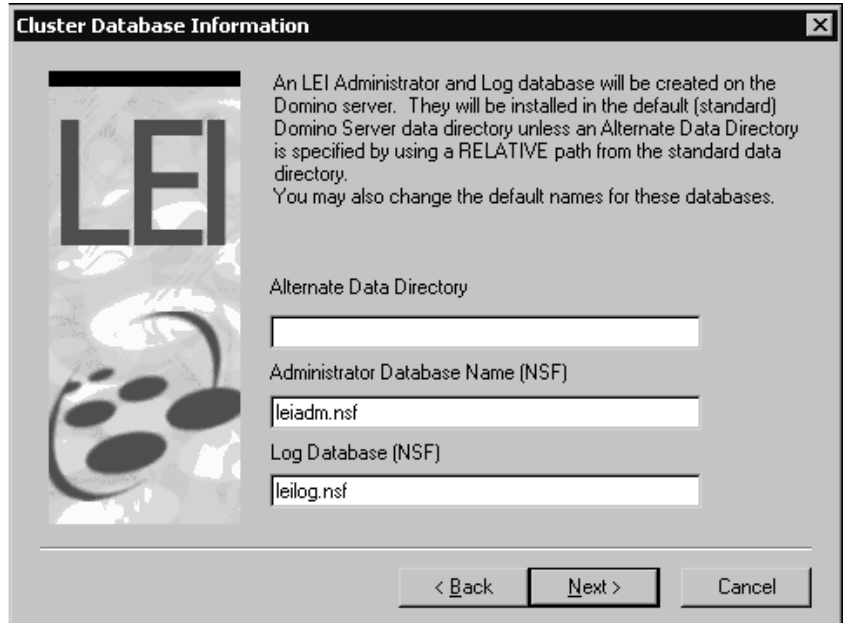
**Note** In some instances, you may wish to perform a “local” database installation for the Cluster databases. If you choose this option, the LEI databases will be installed on the local Domino Server. You may specify “local” as the server name if you are installing to a Domino server on the local machine. Local install to a Notes client is not supported.

If you are installing to an existing Cluster, enter the name of the Domino Server hosting the LEI Administrator.

4. If you entered any name except “local” for the Domino Server, the following screen will appear when you press Next. If the Domino Server you specified is on the local machine, choose Yes; otherwise choose No.



5. The following screen now appears.



The dialog box is titled "Cluster Database Information" and features a close button (X) in the top right corner. On the left side, there is a vertical banner with the letters "LEI" in a large, bold, sans-serif font, and below it, a stylized graphic of a film reel. The main text area on the right contains the following information:

An LEI Administrator and Log database will be created on the Domino server. They will be installed in the default (standard) Domino Server data directory unless an Alternate Data Directory is specified by using a RELATIVE path from the standard data directory. You may also change the default names for these databases.

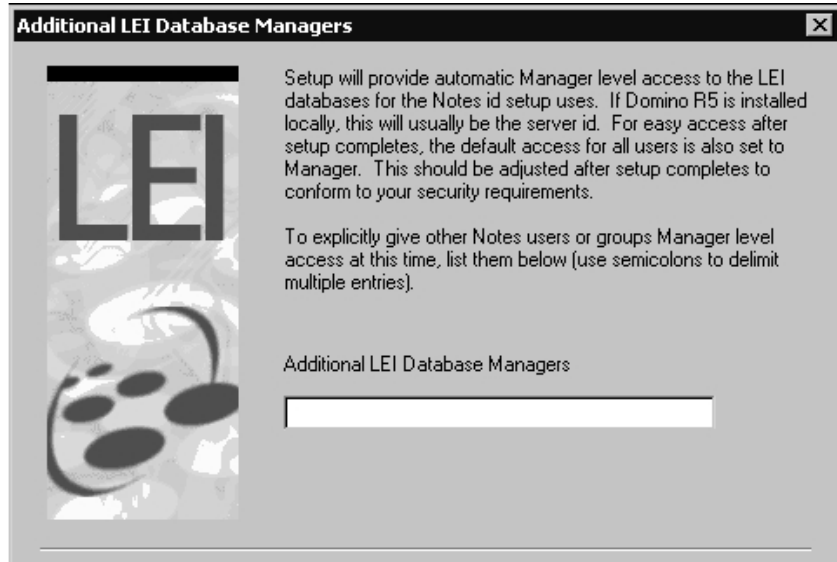
Below the text, there are three input fields:

- Alternate Data Directory:** An empty text box.
- Administrator Database Name (NSF):** A text box containing the value "leiadm.nsf".
- Log Database (NSF):** A text box containing the value "leilog.nsf".

At the bottom of the dialog box, there are three buttons: "< Back", "Next >", and "Cancel".

- On this screen you may change the default file names for the Administrator and Log databases. These databases are always installed as part of creating a LEI Cluster. By default, all databases are created in the standard data directory.
- You can specify an Alternate Data Directory by providing the relative path from the standard data directory. This directory cannot be on another drive. For example, if your Notes data directory is c:\notes\data and you want to place the LEI databases in c:\notes\data\LEI\31, you would specify LEI\31 in the Alternate Data Directory box. Leave it blank to specify the standard data directory. Please note that these databases should not be moved after installation.
- If you are upgrading to an existing Cluster, specify the name of the existing LEI Administrator database. Use the Alternate Data Directory to specify the relative path to the database if it is not located in the standard data directory. You can use a Notes Client to access the database and open the database Properties to verify the file name and location of the Administrator database. Remember, you must have sufficient Access privileges to be able to create documents in the Administrator database for the installation to succeed.

6. Press Next and the following screen appears.



The Notes ID that you use while running Setup is entered in the ACL for all the LEI databases created by Setup. The default Access given is Manager. If there are any other users or groups you wish to grant Manager access to at this time, you may do so here. Enter valid semicolon-delimited Notes IDs here. You can also add additional users after Setup is complete by manually editing the ACLs. Consult "How to set up Administrator Security" in this guide.

**Note** If the Notes ID you use to access the databases after Setup is complete is NOT the same one you use during Setup, add that Notes ID to the Additional LEI Database Managers box now.

7. Press Next and the following screen appears.

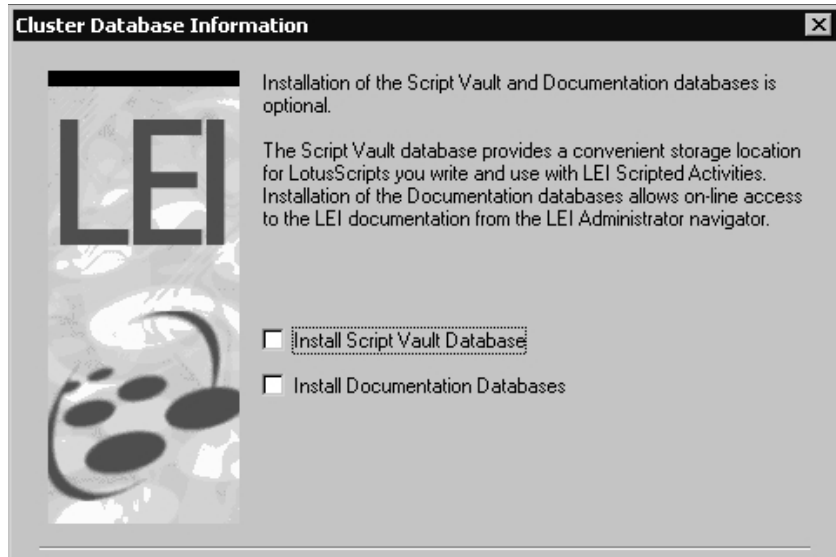


For the upgrade procedure to be successful, you must migrate the contents of your old NotesPump Administrator database to the new LEI Administrator you are creating.

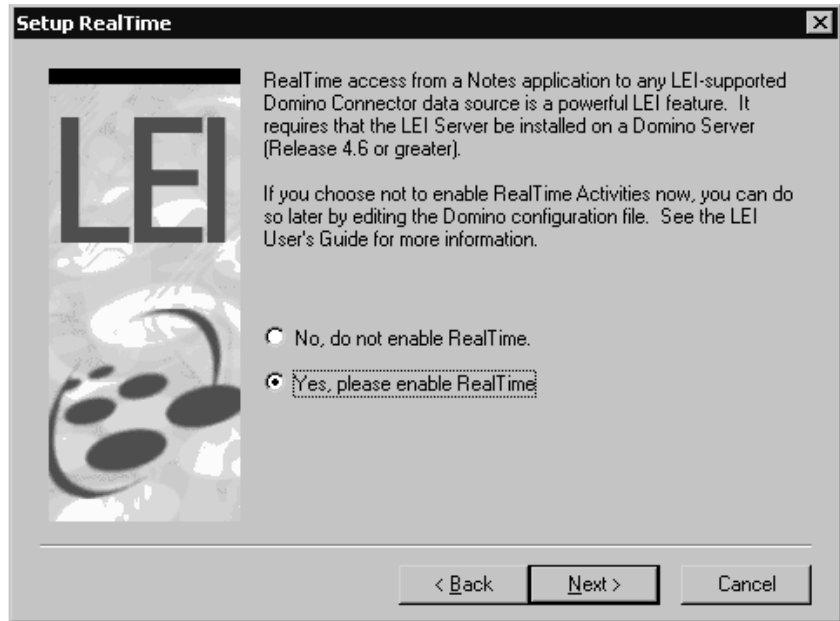
8. Enter the name of the Domino Server hosting the NotesPump Administrator. The default given is what Setup has detected and will be correct unless you have moved the database elsewhere. However, if the Domino Server is located on the local machine, you **MUST** change the entry to "local."
9. Enter the name of the NotesPump Administrator database to migrate to the LEI Administrator. The default given will be correct unless you have renamed it.



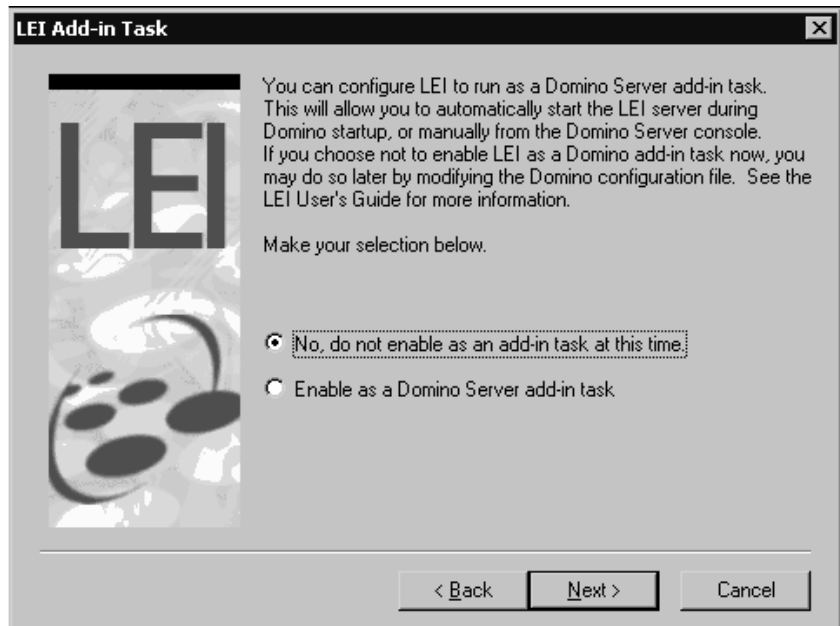
10. Click Next to continue, the following screen appears. Installation of the Script Vault and Documentation databases is optional.



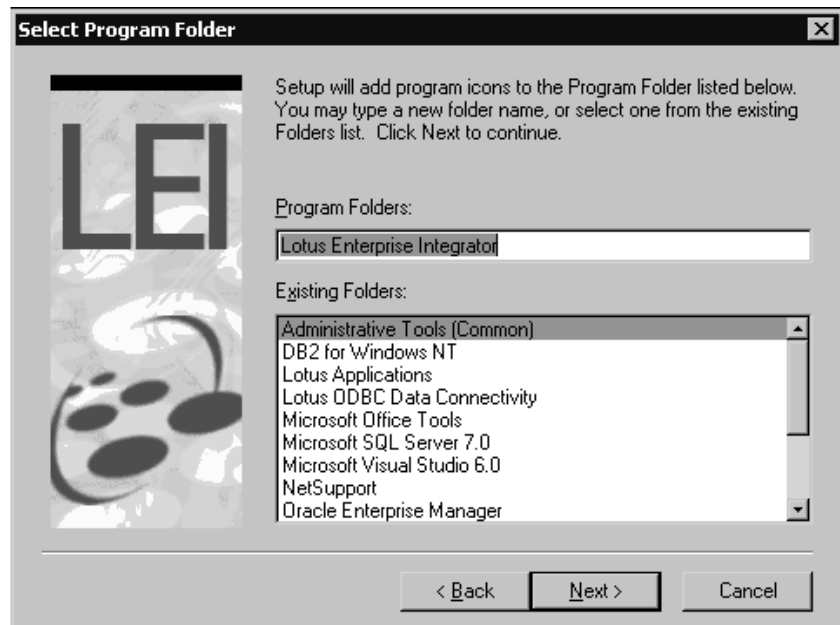
- The Script Vault may be used as a general repository for scripts that you use with LEI Scripted Activities.
  - The Documentation databases are listed below:
    - Lotus Enterprise Integrator User Guide* (leidoc.nsf)
    - Lotus Enterprise Integrator Domino Connector LotusScript Extensions Guide* (lsxlc.nsf)
    - Lotus Enterprise Integrator Domino Connectivity Guide* (lcon.nsf)
    - Lotus Enterprise Integrator Installation Guide* (leiig.nsf)
11. Click Next. The Setup RealTime screen is displayed. The Upgrade procedure does not automatically use the Realtime setting currently used by the NotesPump Server. You must re-specify it here.
- Realtime functionality can be manually configured at a later time if desired. Consult the *Lotus Enterprise Integrator User Guide* for more information on setting up and using Realtime.



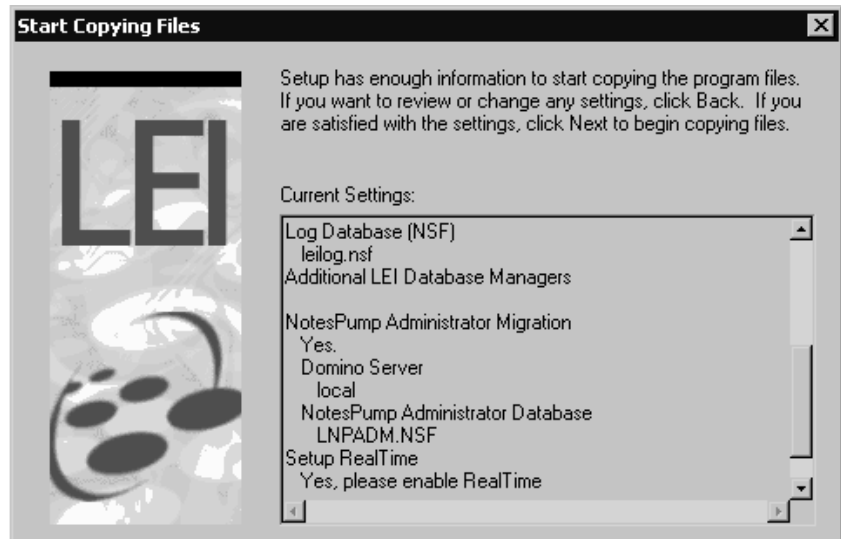
12. Click Next to continue. The LEI Add-in Task screen appears. The upgrade procedure does not automatically use the add-in setting currently used by the NotesPump Server. You must re-specify it here.  
Do not enable LEI to run as an add-in task if your local system only has a Notes Client. Enabling LEI as an add-in task will allow the LEI Server to load and start automatically when the Domino Server is started. The add-in task configuration can be done at a later time if desired.



13. Click Next to continue. The Select Program Folder screen appears. Enter a name for the LEI program folder, select an existing folder, or accept the default.



14. Click Next. The following screen appears, showing a summary of the installation options and selections that you have made. To change any options, click Back in order to page back and make changes. If the selections are correct, click Next to finish the upgrade process.



15. Setup will now copy all LEI Program files and create the lei.ini file in the Notes program directory. The Administrator database and other Cluster databases will be created on the Domino Server you specified. If you are installing into an existing Cluster, the Administrator database will be opened and a LEI configuration document will be created for the new Server. Setup will provide status information throughout this process.

After Setup creates the Cluster databases, it will open the NotesPump Administrator database and begin transferring all Server configuration documents, Link documents (now called Connector documents), and Activity documents to the LEI Administrator. Please note that this process can be very time-consuming if the database is large and network load is high. Setup will provide an error message if a problem occurs.

- When Setup is complete it may prompt you to re-boot your computer. This **MUST** be done before attempting to use LEI in any capacity.
- If you configured the LEI Server to run as an add-in task, it will start when you re-start the Domino Server.

- If a local Domino Server is hosting the LEI Cluster databases, you must re-start Domino (it should have been shut down prior to running Setup) before starting the LEI Server.

### **Special Note for R5 Installations:**

By default Domino R5 installation create separate directories for the Domino Client and Server. It is also possible for Domino 4.6.x installations to be installed this way. If you are installing to a system with this type of configuration, the LEI files and lei.ini will be placed in the Server directory.

### **If Setup is Not Successful**

If Setup does not complete successfully it will display an error message. If the error is easily correctable, such as a misspelled Domino Server name, you can just click Yes and then click Back to step back throughout the Setup dialog screens to the point where the error occurred, from there you can correct the error. Continue pressing Next until the Setup process copies files again.

If an error occurs during the NotesPump Administrator migration process, an error message will be displayed. Press OK to get more information on the nature of the problem and correct it if possible as described in the preceding paragraph. You cannot successfully perform a NotesPump Upgrade without a successful migration of the NotesPump Administrator. If a migration problem cannot be resolved, you will need to perform a fresh LEI install (not a NotesPump migration) when prompted at the beginning of the upgrade process.

If the error cannot be resolved at this time, press No. Setup will remove any components it successfully installed and terminate.

### **UNIX Only**

You may also perform a NotesPump migration by invoking the command line setup utility. From the command line enter:

```
setup MIGRATENPADMIN ADMINSERVER=mydeptserver  
ADMINDATABASE=leiadm.nsf NPADMINSERVER=mydeptserver  
NPADMINDATABASE=lnpadm.nsf
```

See Chapter 6 for more information on the use of the command line-based Setup program.



---

## Chapter 5

# Installing and Configuring LEI on UNIX Platforms

This chapter provides information about system requirements and how to install LEI on UNIX platforms.

---

### AIX System Requirements

#### Hardware Requirements

- Processor: PowerPC
- Memory: Minimum 64 MB RAM; 96 MB or more recommended
- Disk Space: 35 MB of disk space

#### Software Requirements

- AIX 4.1.5 or later
- Notes Release 4.6 or later with required patches

**Note** Read all documentation for Domino (including online) regarding the specific AIX patch-level Domino requires for its server. The patch level required by Domino is a prerequisite for a successful LEI installation. The patch requirements are updated periodically. See [www.lotus.com/dominoei](http://www.lotus.com/dominoei) and the Domino documentation.

---

### Solaris Sparc System Requirements

#### Hardware Requirements

- Processor: SPARC or UltraSPARC
- Memory: Minimum 64 MB RAM; 96 MB or more recommended
- Disk Space: 35 MB of disk space

#### Software Requirements

- Notes Release 4.6 or later
- Solaris Sparc 2.6 or later with required patches

**Note** Read all documentation for Domino (including online) regarding the specific Solaris patch-level Domino requires for its server. The patch level required by Domino is a prerequisite for a successful LEI installation. The patch requirements are updated periodically. See [www.lotus.com/dominoei](http://www.lotus.com/dominoei) and the Domino documentation.

---

## Installing LEI on the UNIX Platform

This section provides an example of installing an LEI Server into a new Administrator database. This installation process creates a new Administrator and installs the Server into the Administrator. This effectively creates a "Cluster". Subsequent Server or Client installations can share the same Cluster.

If you are installing on UNIX, you should know before running LEI Setup whether you have a Domino R4 or R5 installation on the machine to which you are installing LEI. Setup will prompt you for that information.

Installation of the LEI Development Client is not supported for Unix hosts.

**Prior to the next Release of Domino (and DECS 5.0.5), if you reinstall or upgrade Domino with DECS after installing LEI 3.1, you must reinstall or restore LEI.**

For more information, see the following two Web sites:

[www.lotus.com/dominoei](http://www.lotus.com/dominoei)

[www.lotus.com/developers](http://www.lotus.com/developers)

### If You Have a UNIX Domino R4 Installation

On UNIX, the system login ID of the user running Setup must be the owner of the Notes program directory.

Setup must be able to establish symbolic links and possibly copy files to this directory.

Setup will check the UIDs at initialization and will not continue if this requirement is not met.

### If You Have a UNIX Domino R5 Installation

On UNIX, you must be the owner of the Domino server to run Setup (typically 'notes'). The owner of the Domino server will have the Domino server program directory on the path and be able to launch the Domino server.



During Setup you will be prompted for the root password of your machine. This must be provided in order for LEI install to successfully complete.

## General Installation Comments

If the Domino Server on the system that you are installing LEI onto is running Domino Enterprise Connection Services (DECS), shut down the DECS service. From the Domino console, type “tell DECS quit”. To restart DECS, type “load DECS” from the Domino console. See Appendix B for more information regarding LEI and DECS.

You may click on Previous at any time during the setup process to change selections.

## Environment Variables

Once you have created the UNIX user ID for LEI, all environment settings should be entered into the .profile (Korn shell) or .login (C shell) to ensure the same environment settings are used each time you work with LEI. Before installing LEI, configure these environment variables for the appropriate platform you are working with.

### For AIX set the following environment variables:

1. Set the environment variable LANG to your proper locale. If this is not set, the default of “C” will be used.

**LANG=C**

2. Set the environment variable Notes\_ISOLATION to true. This variable allows you to run a Domino Server and Notes Client on the same machine. This only needs to be set if you are also running the Domino Server on the same machine.

**Notes\_ISOLATION=true**

3. Set the environment variable LOTUS to the canonical Lotus directory /opt/lotus. The canonical Lotus directory is the directory where all Lotus software is installed.

**LOTUS=/opt/lotus**

4. Set the environment variable Notes\_ExecDirectory to specify the Notes/Domino executable directory.

**Notes\_ExecDirectory=/opt/lotus/notes/latest/ibmpow**

5. Set the environment variable PATH to include the following directories:

- Notes Resource directory:  
\$LOTUS/notes/latest/ibmpow/res/\$LANG
- Lotus executable directory: \$Notes\_ExecDirectory

- LEI directory (such as /opt/lotus/lei)
- Notes data directory (locates notes.ini file; for example/home/user/lnpump/notesr4)

For example:

```
PATH=$PATH:/opt/lotus/notes/latest/ibmpow/res/$LANG:/opt/lotus/notes
```

```
/latest/ibmpow:/opt/lotus/lei:/home/user/lnpump/notesr4
```

6. Set the environment variable LIBPATH which is used to locate shared libraries to include the following directories:

- LEI directory (such as /opt/lotus/lei)
- Notes executable directory: \$Notes\_ExecDirectory
- Any other product library directories you may require (such as, \$ORACLE/lib, \$SYBASE/lib, \$ODBC\_HOME/dlls)

For example:

```
LIBPATH=/opt/lotus/lei:/opt/lotus/notes/latest/ibmpow:$ORACLE/lib
```

#### **For Solaris, set the following environment variables:**

1. Set the environment variable LANG to your proper locale. If this is not set, the default “C” will be used.

```
LANG=C
```

2. Set the environment variable Notes\_ISOLATION to true. This allows you to run a Domino Server and Notes Client on the same machine.

```
Notes_ISOLATION=true
```

3. Set the environment variable LOTUS to the canonical Lotus directory /opt/lotus. The canonical Lotus directory is the directory where all Lotus software is installed.

```
LOTUS=/opt/lotus
```

4. Set the environment variable Notes\_ExecDirectory to specify the Notes/Domino.

```
Notes_ExecDirectory=/opt/lotus/notes/latest/sunspa
```

5. Set the environment variable PATH to include the following directories:

- Notes Resource directory:  
\$LOTUS/notes/latest/sunspa/res/\$LANG
- Lotus executable directory: \$Notes\_ExecDirectory
- LEI directory (such as /home/user/lnpump)

- Notes data directory (to locate notes.ini file, for example /home/user/lnpump/notesr4)

For example:

```
PATH=$PATH:/opt/lotus/notes/latest/sunspa/res/$LANG:/
opt/lotus/notes
```

```
/latest/sunspa:/opt/lotus/lei:/home/user/lnpump/notesr4
```

6. Set the environment variable LD\_LIBRARY\_PATH which is used to locate shared libraries to include the following directories:

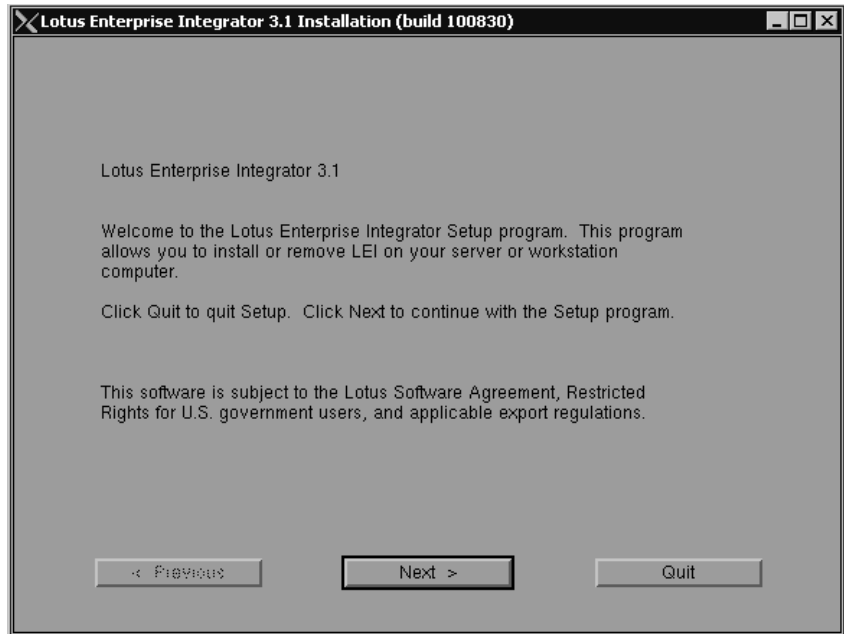
- LEI directory (such as /opt/lotus/lei)
- Notes executable directory: \$Notes\_ExecDirectory
- Any other product library directories you may require (such as, \$ORACLE/lib, \$SYBASE/lib, \$ODBC\_HOME/dlls)

For example:

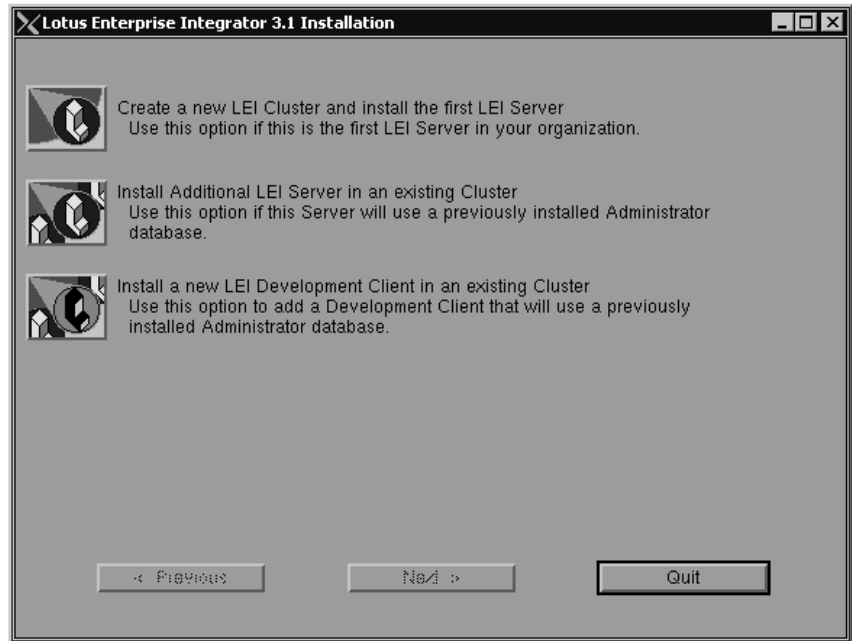
```
LD_LIBRARY_PATH=/opt/lotus/lei:/opt/lotus/notes/latest/
sunspa:$ORACLE/lib
```

## LEI Installation Procedure

1. Run Setup from the LEI CD-ROM.



2. Click Next to continue with the installation. The installation options screen appears, as shown below.



This example uses the option “Create a new Cluster and install the first LEI Server.” The cluster databases, which include the Administrator database, will be installed on the Domino Server chosen later in the setup process. If you have already created an LEI Cluster as part of a previous LEI Server installation and wish this Server to share the same Administrator, select “Install Additional LEI Server in an existing Cluster”.

3. Click the “Create a new LEI Cluster and install the first LEI Server” option. The following screen appears.

The screenshot shows the "Lotus Enterprise Integrator 3.1 Installation" window. It contains several text input fields and checkboxes. The "LEI Server Name" field is filled with "LEI\_Server". The "Domino Server Name" field is filled with "Domino\_Server". The "Alternate data directory" field is empty. The "Administrator Database Filename" field is filled with "leiadm.nsf". The "Log Database Filename" field is filled with "leilog.nsf". There are two checkboxes: "Install LEI LotusScript Vault" (checked) and "Install LEI, LSX, and Lotus Connector Documentation" (unchecked). The "Vault Database Filename" field is filled with "leivlt.nsf". The "Additional Database Managers" field is empty. At the bottom, there are three buttons: "< Previous", "Next >", and "Quit".

- In the LEI Server Name box, you must enter a name.
- In the Domino Server Name box, enter the name of the Domino Server which will host the LEI Administrator Database. This server must be accessible and running. You must also have sufficient privileges to create databases on the Domino Server.

In some instances, you may wish to perform a “local” database installation for the Cluster databases. If you choose this option, the LEI databases will be installed on the local Domino Server. You may specify “local” as the server name if you are installing to a Domino server on the local machine. Local install to a Notes client is not supported.

- Normally, all databases are created in the default, or standard, data directory. However, in the “Alternate data directory” box, you can specify an alternate directory for data by providing the relative path from the standard directory. For example, if your Notes data directory is /usr/notes/data and you want to place the LEI databases in /usr/notes/data/LEI/31, you would specify LEI/31 in the Alternate Data Directory box. Leave it blank to specify the standard directory. Please note that these databases cannot be moved after installation.

- In the Administrator Database Filename and the Log Database Filename boxes, you may change the default file names for the Administrator and Log databases. These databases are always installed as part of creating an LEI Cluster.
- The LotusScript Vault database may be used as a general repository for LotusScripts you will use with Scripted Activities. Installation of this database is optional and you may uncheck the checkbox to skip it.
- Installation of the LEI Documentation databases is optional and you may uncheck the box to skip it. If you do not install the documentation databases, online Help in the Administrator database will not be available. Documentation databases in .nsf format are listed below:

*Lotus Enterprise Integrator User Guide (leidoc.nsf)*

*Lotus Enterprise Integrator Domino Connector LotusScript Extensions Guide (lsxlc.nsf)*

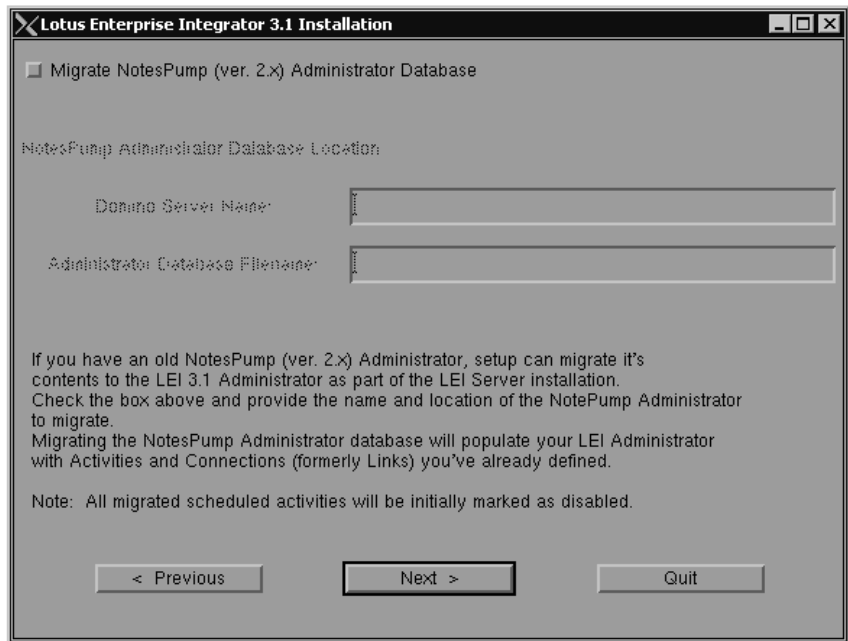
*Lotus Enterprise Integrator Domino Connectivity Guide (lccon.nsf)*

*Lotus Enterprise Integrator Installation Guide (leiig.nsf)*

- The Notes ID that you use while running Setup is entered in the ACL for all the LEI databases created by Setup. The default Access given is Manager. If there are any other users or groups you wish to grant Manager access to at this time use the Additional Database Managers box. Enter valid semicolon-delimited Notes IDs here. After Setup is complete, you can open the databases and manually edit the ACLs. See “How to Set Up Administrator Security” in Chapter 2.

**Note** If the Notes ID you use to access the databases after Setup is complete is NOT the same one you are using during Setup, add that Notes ID at this time to the Additional Database Managers box.

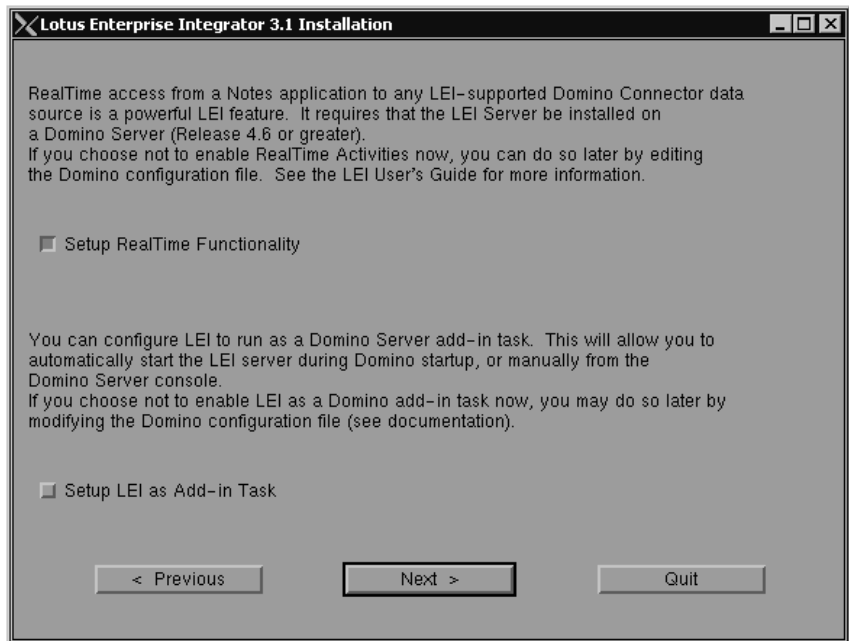
- If you chose to install to an existing LEI Cluster, several of the above fields will not apply and will be unavailable.
4. Click Next to continue. The following screen appears. Select to perform a migration of a NotesPump Administrator database as part of this LEI Server Installation.



The new LEI Administrator will be populated with the contents of the NotesPump Administrator after it is created. This will allow you access to Connections (formerly Links) and Activities you have already defined. See Chapter 4, Upgrading NotesPump to LEI, for more information concerning NotesPump Administrator migration.

5. Click Next to continue. The following screen appears. Make a RealTime selection.

**Note** For information about RealTime activities, see the RealTime Activities chapter of the *LEI User's Guide*.

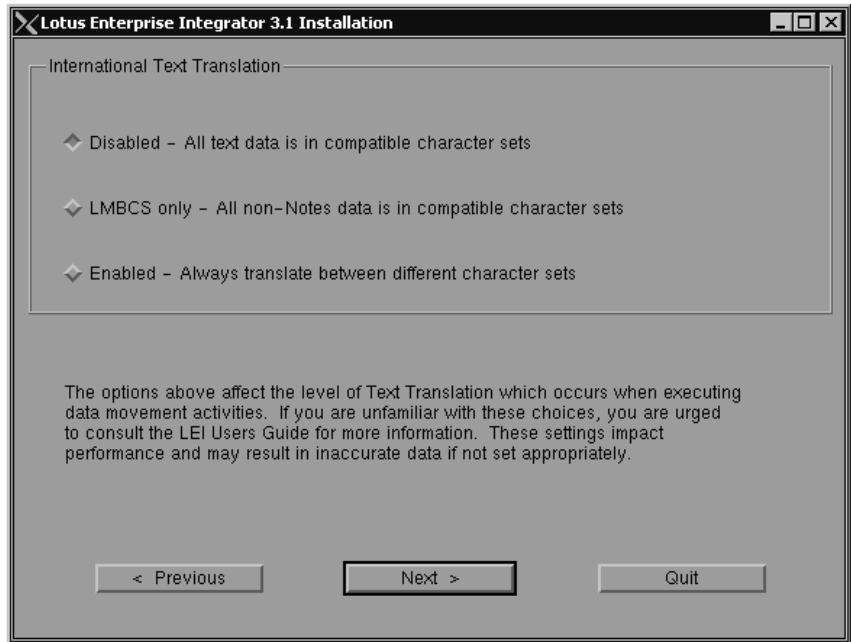


Choose whether to configure the LEI Server as a Domino add-in task. Enabling this option will cause LEI to start automatically when the Domino Server is started.

**Note** When LEI is installed as an add-in task, it uses the KeyFileName entry from the notes.ini file to obtain the ID file, regardless of whether the server itself uses the ServerKeyFile or KeyFileName parameter. As a result, LEI uses the ID last used by the Notes client on the server. As a workaround, each time you use the Notes Client on the Server, switch back to the LEI ID before closing the client.



6. Click Next to continue. The following screen appears. Choose the level of text translation for this LEI Server.

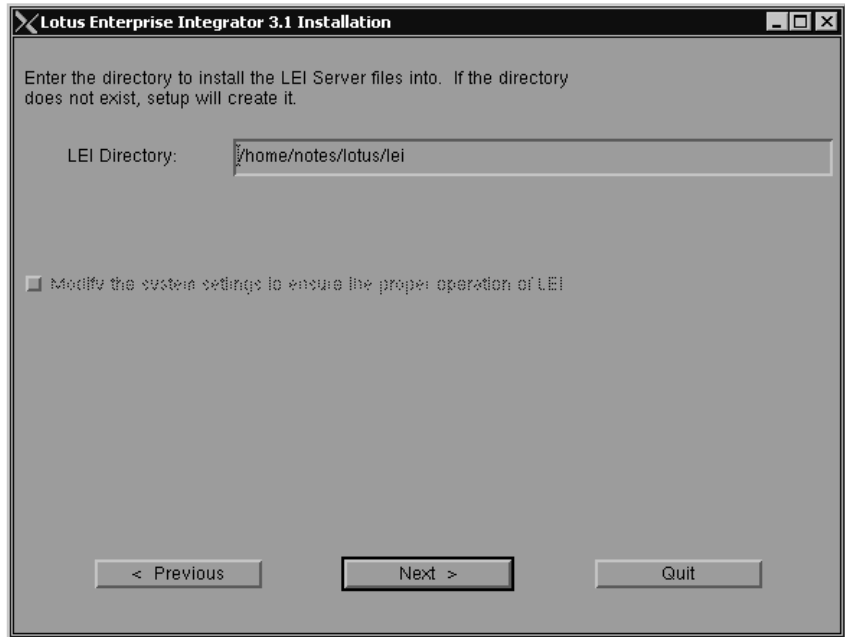


There are three choices for International Text Translation.

- If data is going from a source in one language to a destination in another language, turn on Full Translation.
- If it is going to a Notes database on one end, LMBCS will cause less overhead and will be sufficient.
- If source and destination are in the same language and what the data looks like in Notes is not an issue, you can leave International Text Translation disabled for optimum performance.

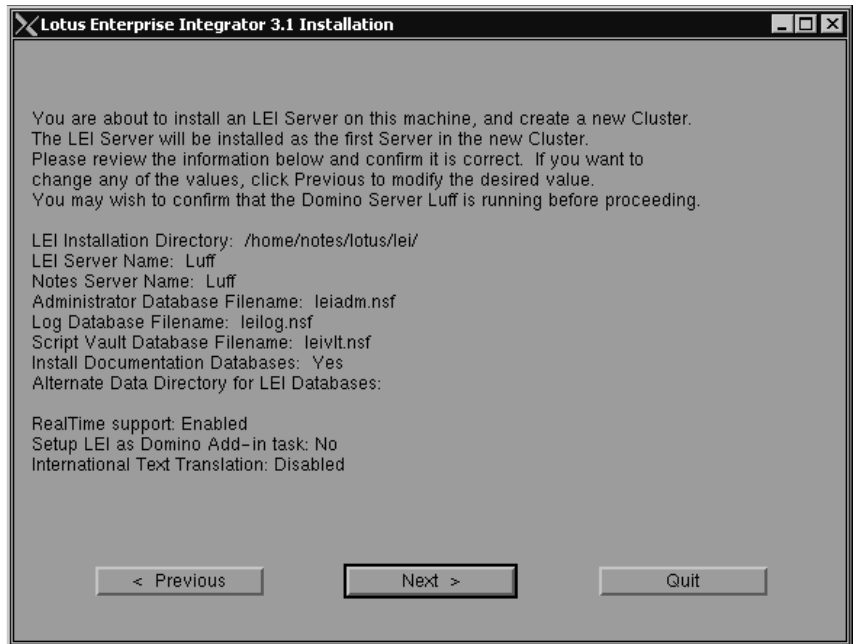
For more information on Text Translation, see the *LEI User's Guide*.

7. Click Next.
8. Enter the directory where the LEI program files will be copied to, or accept the default.



**Note** After the files are copied to the program directory specified in this dialog, symbolic links are created to many of these files in the Notes program directory. Files which are shared with Domino Enterprise Connection Services (DECS) may be copied into the Notes Program directory if they are more recent than the DECS files in that directory.

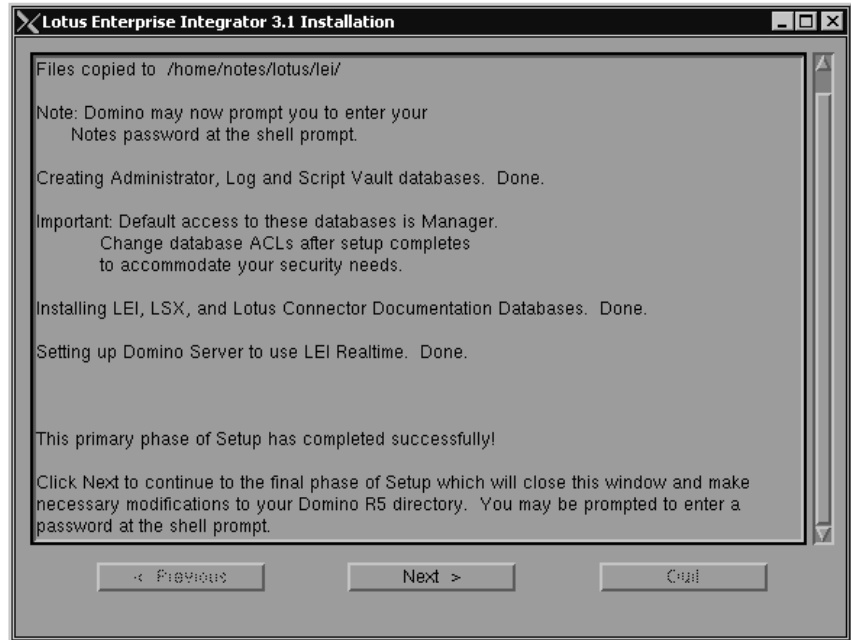
9. Click Next. The following screen appears, showing a summary of the installation options and selections that you have made.
  - To change any options, click Previous in order to page back and make the changes.
  - If the selections are correct, click Next to install perform the Primary Setup phase of LEI.



Setup will now copy all LEI Program files and create the lei.ini file. The Administrator database and other Cluster databases are created on the Domino Server you specified. If you are installing into an existing Cluster, the Administrator database is opened and a LEI configuration document is created for the new Server. Setup will provide status information throughout this process.

- If you configured the LEI Server to run as an add-in task, it will start when you re-start the Domino Server.
- If Setup does not complete successfully it will display an error message screen. You may need to use the scroll bar in the dialog screen to see all the information. If the error is easily correctable, such as a misspelled Domino Server name, you can just click Previous to step back through the Setup dialog screens to the point where the error occurred and correct the error. Then keep clicking Next to return the Setup summary screen. Pressing Next will begin the Setup process again.
- If the error cannot be resolved at this time, press Quit. Setup will remove any components it successfully installed and terminate.

10. Click Next to Perform the Final setup phase of LEI.



---

## Autostarting LEI at OS Startup

Autostart scripts for AIX and Solaris are placed in the installation directory during LEI installation. The scripts contain information on how they should be installed. If you want to use the autostart script, you must modify it to match your environment and then copy it to a system location.

Once started by the autostart script, you can shutdown LEI through the use of the LEI Server Administration commands available in the LEI Server Administrator Database.

## General Instructions

The autostart script assumes the UNIX user ID of "lei" for running LEI. You should edit the script and change the userid to match your installation. Additionally, output from LEI is piped into a file named lei.log. If you do not want the log, you should replace the occurrence of lei.log with /dev/null.

## Autostarting on AIX

1. Check to see if /etc/inittab has an entry to execute /etc/rc.local. You can check this by running:  
`grep rc.local /etc/inittab`
2. If there is no entry for rc.local, add one with the following command:  
`mkitab "rclocal:2:wait:/etc/rc.local >/dev/console 2>&1"`
3. Copy the autostart file to /etc/rc.local and then set the privileges with the following command:  
`chmod 744 /etc/rc.local`

If there is an entry in inittab to execute rc.local, then edit rc.local and append the body of the LEI autostart file to the end of rc.local (include everything but the first line from the autostart file).

## Autostarting on Solaris

1. Copy the autostart file to /etc/init.d/lei and then set the privileges with the following command:  
`chmod 744 /etc/init.d/lei`
2. Create the necessary symbolic link with the command:  
`ln -s /etc/init.d/lei /etc/rc3.d/S50lei`



---

## Chapter 6

# Command Line Installation for UNIX

This chapter provides information for installing LEI through a command line interface on UNIX.

---

### Command Line Install Overview

If you cannot use the graphical user interface program Setup, you can install LEI from the command line. However, if you can execute the GUI Setup program, Lotus recommends that you use it.

Online help is available by issuing the following command:

```
setup HELP
```

For most command line installations, it is easiest to create a command file and then execute the Setup program telling it to read the command file.

---

### Command Line Syntax

The command line syntax for installing LEI is shown below:

```
setup @COMMAND_FILE
```

or

```
setup ACTION [OPTIONS]
```

The variable `COMMAND_FILE` is the exact name of your text file containing an `ACTION` and the `OPTIONS` for `setup` to execute. A command file enables you to house several Action and Option combinations in a file that can be used repeatedly.

- The actions in the command file can be any case; the entries are converted to upper case when the file is read.
- The command file cannot contain any blank lines.

- The UNIX operating system is case specific. The command file name that you specify must match the name that follows the @ exactly. For example, if the command file exists in your current directory and its name is `installlei.txt`, your command line entry would be as follows:

```
setup @installlei.txt
```

Rather than use a command file, you can specify an action and option at the command line itself. In that case, ACTION and OPTIONS are the parameters for `setup` to execute directly from the command line instead of from a file. An example is shown below:

```
setup DIRECTORY=/home/ei/31
```

## Action Descriptions

Specify one of the following ACTIONS.

<i>Action</i>	<i>Description</i>
INSTALLCLIENT	Install an LEI Development Client.
INSTALLSERVER	Install an LEI Server.
INSTALLCLUSTER	Install an LEI Server and associated databases.
REMOVECLIENT	Remove the installed Development Client.
REMOVESERVER	Remove the installed server only.
REMOVECLUSTER	Remove the entire cluster, including the Administrator. WARNING: This permanently deletes the entire cluster.
UPGRADE	Upgrade the LEI installation with a new version.
MIGRATENPADMIN	Migrate a NotesPump installation to LEI.
RESTORELEI	Restore the symbolic links needed by LEI after the Domino Server or Notes Client is upgraded on the machine where LEI is installed.

## Option Descriptions

OPTIONS are comprised of the following parameter keywords and values. The OPTION pairs must be concatenated with an equal sign (=) and must NOT contain spaces. If the value itself contains a space or a slash (/) it must be enclosed with quotation marks. All OPTIONS are set to the default value as noted if they are omitted.



OPTIONS used with all Installs: [ ] indicates the default.

LEI	LEI server or client name — this is mandatory, there is no default
ADMINSERVER	Domino server name [local]
ADMINDATABASE	LEI Admin database name [leiadm.nsf]
DATADIRECTORY	Relative path from default Domino data directory to install/locate LEI Cluster databases [standard data directory]
DIRECTORY	(UNIX only) directory path to install LEI files ([or example, opt/lotus/lei])

OPTIONS used with INSTALLSERVER and INSTALLCLUSTER: [ ] indicates the default.

TRANSLATION	DISABLED/LMBCS/ENABLED [DISABLED]
REALTIME	YES/NO [NO]
SERVERTASK	YES/NO [NO]

OPTIONS used with INSTALLCLUSTER: [ ] indicates the default.

ADMINLOGDATABASE	LEI Log database name [leilog.nsf]
VAULTDATABASE	Script vault database name [not installed]
ADDITIONALMGR	Notes user IDs to be added as Manager [NONE]
DOC	NO/YES [NO]

OPTIONS used for MIGRATENPADMIN: [ ] indicates the default.

ADMINSERVER	Domino server name [local machine]
ADMINDATABASE	LEI Admin database name [leiadm.nsf]
NPADMINSERVER	Domino server hosting old NotesPump Admin [local machine]
NPADMINDATABASE	NotesPump Admin database [lnpadm.nsf]

## Example

This example shows how to install a new LEI Cluster with the following settings:

- Enterprise Integrator Server Name: Enterprise Integrator Server 1
- Domino Server Name: Rolm
- Administrator Database Name: leiadm.nsf
- Log Database Name: leilog.nsf
- LotusScript Vault: leivlt.nsf
- Documentation Database: Install it

- Text Translation=LMBCS
  - Enterprise Integrator Installation Directory=/opt/lotus/lei
1. Add the group LEI to the list of database managers by creating a text file called `installlei.txt` whose contents are:

```
INSTALLCLUSTER
```

```
LEI="Enterprise Integrator Server 1"
```

```
ADMINSERVER=ROLM
```

```
ADMINDATABASE=leiadm.nsf
```

```
ADMINLOGDATABASE=leilog.nsf
```

```
VAULTDATABASE=leivlt.nsf
```

```
TRANSLATION=LMBCS
```

```
DIRECTORY=/opt/lotus/lei
```

```
DOC=YES
```

2. At the UNIX command line, issue the `setup` command and specify the command file name after the `@` symbol. In this example, the exact command line syntax would be as follows:

```
setup @installlei.txt
```

---

# Chapter 7

## Installing LEI on the AS/400

This chapter provides instructions for installing Lotus Enterprise Integrator on the AS/400.

---

### AS/400 System Requirements

#### Hardware Requirements

- AS/400 RISC machines only

#### Software Requirements

- V4R2 of OS/400 or later version
- 5769-LNT — Domino for AS/400
- **\*BASE** is minimally required to run LEI.

To check, use DSPSFWRSC. Other options may also be installed.

<i>Resource</i>	<i>Option</i>	<i>Feature</i>	<i>Description</i>
—>5769LNT	*BASE	5050	Lotus Domino For AS/400
—>5769LNT	*BASE	2924	Lotus Domino For AS/400
5769LNT	1	5050	AS/400 Integration
5769LNT	1	2924	AS/400 Integration
5769LNT	3	5050	C API
5769LNT	4	5050	C++ API
5769LNT	5	5050	LotusScript Extension ToolKit
5769LNT	6	5050	HiTest C API
			<b>Note</b> HiTest is not an installation requirement.
5769LNT	7	5050	Advanced Services

Any identified AS/400 software fixes (PTFs) required by 5769-LNT and 5769-LNP and specified in the release notes for the two products must be applied.

**Note** LEI running native on the AS/400 does not require any additional DB2 connection software beyond what is already provided with the integrated DB2/400. You can do Distributed Relational Database Connectivity to other DB2 platforms in your network with what is native on your AS/400. You must make sure that all DB2 database targets are registered in the Relational Database Directory (see WRKRDBDIRE) in order to connect to them. This includes the local DB2/400.

**Note** AS400 currently supports the DB2, File, Notes, Text, Collapse/Expand, Meter, and Order base connectors and the SAP, JDE, and Lawson premium connectors.

For additional information, please see the Redbook, *Lotus Domino for AS/400: Integration with Enterprise Applications*, SG24-5345-00, available at the following URL:

[www.redbooks.ibm.com/abstracts/sg245345.html](http://www.redbooks.ibm.com/abstracts/sg245345.html)

This Redbook contains a chapter regarding LEI usage on the AS/400.

---

## Loading Code on AS/400 from CD

If you have the NotesPump installed on your AS/400, you must do a DLTLICPGM 5769LNP prior to doing the following installation. This delete licensed program request will only remove the licensed program product code; it will not affect your NotesPump Administration database needed for migration.

**Note** Prior to initiating the LODRUN sequence below you must shut down any locally running Domino servers on your AS/400 (see WRKDOMSVR for active servers or ENDDOMSVR command). This is a necessary step because some service programs common to Domino and LEI will be replaced.

You use the LODRUN command to load LEI code on to the AS/400.

1. Insert the LEI CD into the CD-ROM drive.
2. Enter the following command:  
`LODRUN DEV(*OPT) DIR('/OS400')`
3. To verify installation, use the Display Software Resources (DSPSFWRSC) command and look for:

Resource	Option	Feature	Description
5769LNP	*BASE	5050	Lotus Enterprise Integrator

You are now ready to configure the LEI server using the Add Lotus Enterprise Integrator Server (ADDLEISVR) command.

The following table shows some common error messages from LODRUN and possible solutions:

<i>Error Message</i>	<i>Possible Cause</i>	<i>Possible Solution</i>
CPF3717 File not selected	Did not find right file on CD.	Make sure using parameter DIR(/OS400) on LODRUN command.
CPD3DCB — Library QNOTESLEI for product 5769LNP option *BASE release *FIRST cannot be used.	Did not do a DLTLICPGM of 5769LNP (NotesPump Version 2.5A) prior to doing a LODRUN of the new LEI Version 3.1.	LEI 3.1 is placed in a new product library QNOTESLEI. As a note to NotesPump users, the old product library was QNOTESPUMP. To correctly restore the new licensed program, you must delete the old licensed program prior to install. Note that this delete will affect the product code only, not any existing NotesPump Administration databases.

---

## Adding LEI Server to AS/400 Domino Server

After LEI is loaded on the AS/400, you configure an LEI Server to run under an existing Domino Server by using the Add Lotus Enterprise Integrator Server (ADDLEISVR) command.

**Note** Additional explanation and parameter details are available by prompting the command (F4) and pressing help (F1).

1. The Domino server must be started prior to running the Add Lotus Enterprise Integrator Server (ADDLEISVR) command.
2. Only one LEI Server is allowed to be configured per AS/400. Even if there are partitioned Domino Servers on AS/400, only one can have an LEI Server configured.
3. Adding a LEI server to your AS/400 is considered an administrative function (ADDLEISVR command). The user profile requesting the add needs \*ALLOBJ, \*SECADM, \*IOSYSCFG and \*JOBCTL special authorities.

4. To add (configure) an LEI server, use the ADDLEISVR command.

<i>Parameter</i>	<i>Description</i>	<i>Notes</i>
SERVER	Name of LEI Server	You specify the specific server name here.
LCLDOMSVR	Name of Domino Server where LEI will run	This must be a Domino server configured and started on local AS/400. The maximum length allowed is 127.
DOMSVRDB	Name of Domino Server where LEI Administrator Database will reside	This must be a Domino server configured somewhere in your network. This can be the same or a different server then the LCLDOMSVR. The LEI Admin database may reside on Domino Server running on another AS/400 or Domino on another platform. The Domino server must be active. The maximum length allowed is 127.
CRTDB	Create Administrator Database (*YES or *NO)	If *NO, then the LEI databases must already exist on the DOMSVRDB, and must be the correct version. This option would be used if adding an additional LEI server to an existing LEI administrator database.
AUTOADD	Autostart Lotus LEI (*YES or *NO)	If *YES, then the notes.ini file of the specified LCLDOMSVR will be modified to add LEI to ServerTasks list. Then, when ever the Domino server is started, the LEI server will also start. If *NO, then the notes.ini is not modified. To start the LEI server, you must issue the load of command from Domino console.
AUTORT	Automatic setup of RealTime extension manager	If *YES, then the RealTime extension manager will be enabled. If *NO, then the notes.ini file will not automatically be set up to enable the RealTime extension manager.
MIGRATE	Migrate from NotesPump	The default is *NO. Specifying *YES will migrate links, link options, and activities from a specified NotesPump Administration database to the LEI Administration database.

*continued*

<i>Parameter</i>	<i>Description</i>	<i>Notes</i>
MIGDOMSVR	Migration Domino server	Specify the name of the Lotus Domino server on which the NotesPump Administration database to be migrated resides. *DOMSVRDB default means that the NotesPump Administration database resides on the same Domino server as specified in the DOMSVRDB parameter.
MIGADMDB	Migration administration database	Specify the name of the NotesPump Administration database to be migrated. Inpadm.nsf is the default create name on the ADDLNPSVR command.
ALTDBPATH	Alternate database path (directory)	*DEFAULT means that the databases will be created in the default notes data directory. A supplied path means that the databases will be created in the absolute path, example '/notes/data/lei', or in the relative path, just 'lei'.
ADMDB	LEI Administrator Database	The default is leiadm.nsf . This will be created in the Domino server's data directory, (normally notes/data).
DBMGR	Database Manager's Name	Name, (Last, First, Middle initial) This name will be placed in ACL for the Admin, Script Vault and Log database with authority of Manager. The default access for the databases is none, so the name must match exactly the name of a Notes user. If it does not match, then the database will be created but will not be accessible by anyone on a connecting Notes client.
LOGDB	LEI Log Database	The default is leilog.nsf. It will be located in the Domino server's data directory (normally notes/data) .
INSDOC	Install Lotus Enterprise Integrator documentation databases	The default is *NO. This means the installation of documentation databases is optional and will not be moved to the specified or default data directory. If *YES, this will move the LEI documentation and other documentation databases to the specified or default data directory.
VLTDDB	LEI Script Vault Database	The default is leivlt.nsf. This will be located in the Domino server's data directory (normally notes/data).

## Sample

The following CL command will create an LEI server called BashirLEI on Domino Server Bashir.

The LEI Administrator Databases will also be placed on the same Domino Server (Bashir). The LEI databases will be created and the manager in the ACL will be Tom T Dilbert. Note that the DBMGR must match an authorized Notes user id exactly, or you will not be authorized to open the LEI Administration databases after the configuration.

```
ADDLEISVR SERVER(BashirLEI) LCLDOMSVR(Bashir)
DOMSVRDB(Bashir) DBMGR(Dilbert Tom T)
```

After the LEI server is added to the Domino Server, you are ready to start the LEI server.

LEI Activities can then be created and scheduled by working with the LEI Administrator database from a Notes client workstation.

**Note** Lotus LEI on AS/400 does not support configuration and execution under CCSID 5026.

## Common ADDLEISVR Error Messages

The following table shows some common error messages from ADDLEISVR command and possible solutions.

**Note** Stand-alone application requests (like ADDLEISVR) may be affected by sophisticated proxy network settings in the server document in the names.nsf. Although the connection to the Domino Server may appear straight forward externally (via ping, show ports, host table entries, etc), this may still not be the case. If you get an 'unable to find path to server' message, you might want to check the PROXY attributes in your Domino server document. Ones that have been known to generate the above error in the past are settings in the Notes RPC proxy and the Socks proxy.

<i>Error Message</i>	<i>Possible Cause</i>	<i>Possible Solution</i>
Can not add configuration document to an existing Lotus Enterprise Integrator Administrator DB.	Target Lotus Enterprise Integrator Administration database is not of the current release.	This checks the release level of the target LEI Administrator database.

*continued*



<i>Error Message</i>	<i>Possible Cause</i>	<i>Possible Solution</i>
Get a Hitest message stating that 'You are not authorized to perform operation'.	Under investigation. May be related to multiple server configurations or something not getting cleanup when server is removed.	A workaround to this is to set the KeyFileName to a valid user ID other than the server ID in the notes.ini. When you execute the request, you will then get prompted for the password (if the user ID is password protected). When you are done, you can change the notes.ini back to the server ID if you like.
Get a Hitest message stating that the requesting client ID and the server ID are the same. Implication being that you cannot use the same ID for the client and the server side.	Problem appears to occur when the KeyFileName is set to the same ID as the running Domino server (server.id) but it is not consistent.	To work around this problem, update the notes.ini and specify a valid and accessible user ID in the KeyFileName. Don't specify the default of server.id. When you execute the request, you will then get prompted for the password. When you are done, you can change the notes.ini back to the server.id if you like.
Get a HiTest message stating that it cannot find a path to the server.	Possible problems could be one of the following items: The Domino server (name) is not in the TCPIP host table entries. You do not have a KeyFileName specified in your notes.ini. QNOTES is not authorized to the ID file specified in the KeyFileName.	If your Domino Server name is not the name of your AS/400 server, you may need to add an alias entry to the TCP/IP host table entry. The ADDLEISVR process is acting as a client to the Domino server and needs to know how to find the IP address of the Listening Domino Server. Use the command CFGTCP and (via option 10) add an entry containing the name of your Domino Server and the IP address of your server or alternatively, add the Domino server and IP address to your Domino name server (DNS). If KeyFileName is not specified, add one with a user ID available in the Domino data directory. Also, if you copy a user ID to the Domino data directory, make sure that QNOTES is authorized to it. Your Domino server must also be active.

*continued*

<i>Error Message</i>	<i>Possible Cause</i>	<i>Possible Solution</i>
'LEI is already configured'.	This means there is an existing lei.ini file in the following directory: /qibm/userdata/lotus/lei	As long as ADDLEISVR thinks there is an existing configuration, it will not let you add another, use RMVLEISVR or delete the lei.ini manually. Note that only one LEI Server is allowed per AS/400.
Message that copy of leidoc.nsf did not complete.	This took too long to copy the documentation database to the target Domino data directory.	To work around this problem, do the copy yourself; use the CPY command, or option 3 on WRKLNK. Copy qibm/proddata/lotus/lei/leidoc.nsf to the Domino server data directory. Remember to give QNOTES user profile authority to any objects copied to the Domino data directories.

## Removing LEI Server from AS/400 Domino Server

The Remove Lotus Enterprise Integrator Server (RMVLEISVR) command removes the configuration of a LEI server from your AS/400. It does not remove the LEI product (5769LNP) from the AS/400. After running RMVLEISVR, you can configure a new LEI server by using the ADDLEISVR command.

Removing a LEI server (RMVLEISVR) is considered an administrative function. In order to run the command successfully, you need \*ALLOBJ, \*SECADM, \*IOSYSCFG and \*JOBCTL special authorities.

<i>Parameter</i>	<i>Description</i>	<i>Notes</i>
DLTDB	Delete Admin Databases	If *NO (default), the program will not delete the LEI database created during ADDLEISVR. If *YES, the program will delete the LEI database created during ADDLEISVR (admin, log, doc, script vault). It does not delete any backup database.

## Example

The following example will remove the LEI Server configuration from the Domino Server and also delete the LEI Administration databases. Any Connection or Activity work defined in the LEI Administrator database would be lost. It does not delete any backup copies of the LEI Administrator created using the Admin-Backup activity.

```
RMVLEISVR DLTDB(*YES)
```

---

## Removing Code from the AS/400

You can remove the LEI Licensed Program Product from the AS/400 by issuing the following command:

```
DLTLICPGM LICPGM(5769LNP)
```

Respond with “i” for ignore on any delete journal receiver messages.

Note that the DLTLICPGM will delete all code and corresponding symbolic links associated with LEI. However, it does not delete the administration databases that may exist in your Notes data directory, nor does it delete the lei.ini configuration file which is in /qibm/userdata/lotus/lei.

---

## Notes.INI KeyFileName

The LEI Server on the AS/400 runs as an add-in task to the Domino server. This means it runs under the ServerKeyFileName=server.id. All activities launched by the LEI server also run under server.id.

If you launch activities outside of the LEI Server, for example, through a call to LEIACT or LEICGI, you may need to set KeyFileName to a valid user ID other than that of the server. If the CGI invocation of a LEI activity is made (LEICGI), the KeyFileName user ID should not be password-protected. If a password is required and the requesting process is not interactive, a prompt for password will occur on the Domino console. Knowing to look on the Domino console is not obvious nor is it that useable in the LEICGI scenario.

Also, as already noted, you may need to change KeyFileName from server.id to a valid user ID in order to issue the ADDLEISVR command. This will only be necessary if you get any of the connection errors listed in the ADDLEISVR error table.



---

## Chapter 8

# Uninstalling LEI

This chapter provides instructions for uninstalling LEI on all platforms.

---

### Overview

When you remove an LEI cluster, the LEI server and LEI Administrator databases are removed. All information in the Administrator database is lost, including all configuration, connectors, activities, and logs. This means all servers and clients using this Administrator will be disabled.

If an LEI server is removed from an Administrator database (but the cluster is not removed), the Administrator database still exists and new LEI servers may be installed to it. The lei.ini configuration file is deleted.

---

### Uninstalling on the Windows Platform

Use Add/Remove Programs from the Windows Control Panel to uninstall LEI. You will be given the option to uninstall just the server or client or to remove the entire cluster.

If you are prompted during the uninstall remove shared files, it is strongly recommended that you respond “No to All.”

Past versions of LEI shared files with DECS and even though Windows may believe these files are not in use, you should not delete them.

---

### Uninstalling on the UNIX Platform

Use the Setup program to remove an LEI Server, Client, or Cluster.

To remove an LEI Server, Client, or Cluster, complete the following steps:

1. Run Setup from the LEI directory.
2. Choose the option to remove the Cluster or the Server (or Client).

This removes the LEI files from the data directory, the LEI directory, and the Notes/Domino directory.

---

## **Uninstalling on AS/400**

On AS/400, use RMVLEISVR and DLTLICPGM to remove LEI.

---

## Appendix A

# Troubleshooting

This appendix provides information for troubleshooting your LEI installation.

---

### Troubleshooting the LEI Installation

This section provides information about problems that may occur during installation of LEI.

#### UNIX Installations

The LEI Setup program uses the Notes API and the shared library, liblchtapi, which is shipped with LEI. Additionally, the GUI Setup uses the Motif shared library. If Setup is unable to locate any of these shared libraries, it will terminate with an error message indicating the problem. You should be able to correct the problem by modifying the shared library search path in the user's environment. You may have to add the location of the Motif or Notes library. If liblchtapi cannot be loaded, find it manually and add its location to the user's environment.

**Note** If your installation does not have Motif installed or if you are not using an X-terminal, you can pass all the parameters necessary to perform the installation to the Setup program by using the command line installation. Refer to Chapter 6, Command Line Installation.

#### AIX

(ksh)

```
export LIBPATH=$LIBPATH:./additional/path/for/motif/library
```

(csh)

```
setenv LIBPATH $LIBPATH:./additional/path/for/motif/library
```

## Solaris

(ksh)

```
export
```

```
LD_LIBRARY_PATH=$LD_LIBRARY_PATH:./additional/path/for/motif/  
library
```

(csh)

```
setenv LD_LIBRARY_PATH
```

```
$LD_LIBRARY_PATH:./additional/path/for/motif/library
```

---

## Using LEI with Domino 4.x on Solaris Platforms

If you are using Domino 4.x on a Solaris platform, remove the setuid bit from the Domino Server executable. Additionally, to ensure proper performance of the Domino Server, the system configuration file /etc/system needs to be updated to allow a larger than default amount of file descriptors per process. Please follow the steps below as the root user only after verifying that you have installed all the required Solaris OS patches as described in the Domino release notes:

1. Remove the setuid bit.

(Solaris Sparc)

```
chmod u-s /opt/lotus/notes/latest/sunspa/server
```

2. Back up the system configuration file.

```
cp /etc/system /etc/system.bck
```

3. Update the system configuration file.

Method A: Using an editor such as vi, edit /etc/system and add the following line:

```
set rlim_fd_max=8192
```

Method B: Execute the following command to update the file:

```
echo set rlim_fd_max=8192 >> /etc/system
```

4. Reboot the system for the configuration change to take effect.

**Note** Failure to remove the setuid bit will result in the Domino Server sending out the following message:

```
"Addin: Agent error message: Error loading USE or USELSX  
module: *lsxlc"
```



---

## Appendix B

# Restoring LEI after Upgrading Domino or Notes

This appendix describes the process of restoring LEI after you have upgraded Notes or Domino.

---

### Process Overview

Prior to the next release of Domino (and DECS 5.0.5), if you reinstall or upgrade Domino with DECS after installing LEI 3.1, you must reinstall or restore LEI.

For more information, see the following two Web sites:

[www.lotus.com/dominoei](http://www.lotus.com/dominoei)

[www.lotus.com/developers](http://www.lotus.com/developers)

On UNIX, you can run 'setup restorelei' from the LEI program directory to restore the LEI installation after a Domino upgrade or reinstallation. This option is not available for Windows. On Windows, you must reinstall LEI. Note that the existing LEI Administrator should still be present, and you can reinstall into that same Administrator. The command 'setup restorelei' will automatically restore LEI into the same Administrator. For related information, see the section entitled UNIX Platform later in this appendix.

If Domino or Notes is upgraded to a version prior to 5.05 or uninstalled then reinstalled on a machine where LEI is also installed, this may temporarily disable LEI. If you reinstall or upgrade Domino after installing LEI, you must reinstall LEI. See the appropriate section below for your operating system to remedy this situation.

**Note** If you are writing scripts in LEI 3.1 using both the LEI LSX and the LC LSX prior to the next release of Domino (and DECS 5.0.5), you must reinstall LEI after reinstalling or upgrading Domino. The LEI LSX must be loaded after the DECS API in order for all aspects of LEI LSX and LC LSX to function properly with LEI 3.1. This specifically affects named sessions, certain types of logging, and communication with the Notes Connector.

---

## Windows Platform

If the Domino or Notes upgrade, or reinstallation, is done in the original directory, LEI should function as before and no further action should be needed.

If the original Domino or Notes directory is deleted in this process, or if the Notes or Domino directory is changed you will need to reinstall LEI. If you need to reinstall, you must first uninstall LEI and then perform a fresh installation. When uninstalling be sure to keep the existing LEI Cluster; do not remove it, unless you really want to start with a brand new empty Administrator database. When reinstalling your LEI Server or Client, choose to install it into the existing Cluster (Administrator database).

### Windows

Use Add/Remove programs in Control Panel, and uninstall Lotus Enterprise Integrator.

---

## UNIX Platform

It should not be necessary to reinstall LEI on a UNIX platform. However the following action must be taken:

1. Change directory to the LEI program directory.
2. Issue the following command from the command line:

```
setup RESTORESYMLINKS
```

This will restore needed symbolic links in the new Domino or Notes directory to the LEI directory. The setup command requires that the UID of the person running setup be the owner of the Domino or Notes directory.

### Optional Parameters

The following command can also accept two optional parameters.

```
setup RESTORELEI
```

For example, to restore the add-in task and RealTime settings, enter the following command:

```
setup RESTORELEI REALTIME=YES SERVERTASK=YES
```





---

# Chapter 1

## Introduction

This chapter provides information about this manual and related documentation.

---

### Overview

This manual provides information related to enterprise connectivity for Domino Enterprise Connection Services (DECS), Lotus Enterprise Integrator (LEI), Lotus Connector LotusScript Extensions for DECS (LC LSX), and Lotus Connector LotusScript Extensions for LEI (LEI LSX).

This manual also contains information about the software required to connect to external data sources and access the data in those external sources. In addition, the Lotus Domino Connector connectivity test program, LCTEST, is described.

LCTEST runs a connectivity test that establishes that the client data source access libraries are available and functional on the Domino Server. The test program does not test any specific functionality of the products, but ensures that the communications and client software required to access a specific data source is available and properly configured.

---

### Organization of This Manual

This manual contains the following chapters.

<i>Chapter</i>	<i>Description</i>
Chapter 1 Introduction	This chapter provides information about the organization of this manual and includes information about related documentation.
Chapter 2 LCTEST and CONTEST	This chapter provides information and instructions for running the connectivity test programs LCTEST and CONTEST.
Chapter 3 DB2 Connectivity	This chapter provides information and instructions for testing your system connectivity to DB2.

*continued*

<i>Chapter</i>	<i>Description</i>
Chapter 4 EDA/SQL Connectivity	This chapter provides information and instructions for testing your system connectivity to EDA/SQL.
Chapter 5 ODBC Connectivity	This chapter provides information and instructions for testing your system connectivity to ODBC.
Chapter 6 Oracle 7 Connectivity	This chapter provides information and instructions for testing your system connectivity to Oracle 7.
Chapter 7 Oracle 8 Connectivity	This chapter provides information and instructions for testing your system connectivity to Oracle 8.
Chapter 8 OLE/DB Connectivity	This chapter provides information and instructions for testing your system connectivity to OLE/DB.
Chapter 9 Sybase Connectivity	This chapter provides information and instructions for testing your system connectivity to Sybase.

---

## Related Documentation

Refer to the documents below for more information.

### Domino Enterprise Connection Services (DECS)

The *Domino Enterprise Connection Services User's Guide* provides information and instructions for using Domino Enterprise Connection Services (DECS) and is also available in NSF and PDF format.

### Lotus Enterprise Integrator (LEI)

The *Lotus Enterprise Integrator for Domino User's Guide* provides information and instructions for using LEI and is also available in NSF and PDF format.

*Lotus Enterprise Integrator Release Notes* — The release notes contain information about the current release of Lotus Enterprise Integrator that may not be included in the printed documentation. Lotus recommends that you read the release notes prior to installing the software.

### Other Documentation

For more information that you may find helpful, refer to the following documents:

- *Lotus Enterprise Integrator Installation Guide* Section — This section of the book provides information on how to set up Domino Connectors, including information about required software and instructions for testing connectivity.
- Information about LEI and DECS can be found at the following Web sites:

[www.lotus.com/dominoei](http://www.lotus.com/dominoei)

[www.lotus.com/developers](http://www.lotus.com/developers)

- *Lotus Enterprise Integrator Domino Connector LotusScript Extensions Guide* — This manual describes the LotusScript Extensions for Domino Connectors, which can be used in writing scripted sessions for accessing enterprise data.
- *Lotus Enterprise Integrator Domino Connector Java Class Library Reference Guide* — To obtain the LC Java Classes and their related documentation, choose the “Lotus Connector Classes for Java” link from the [www.lotus.com/dominoei](http://www.lotus.com/dominoei) main page.
- *Domino Administrator’s Guide* — This manual provides information for configuring and administering a Notes installation.
- *LotusScript Language Reference* — This manual provides information about writing LotusScript programs. This could be useful if you want to use the Enterprise Integrator LotusScript Extensions to write custom Activities.
- *Additional Domino Connector Documentation* — Lotus Development sells additional Domino connectors for enterprise systems including Enterprise Resource Planning (ERP) and Transaction Processing Systems. Specific documentation about those connectors is included with the connector software and package. You may need documentation for the specific databases, ERP and transaction processing systems that you are using.
- *Lotus C API Online Reference Guide* — This is an online document delivered with the Enterprise Integrator software developer’s kit (available on the Lotus Toolkit Collection CD) and on the Lotus Enterprise Integration Web location. Developers wishing to create new Connectors for external data sources, which can then be operated via DECS, the Lotus Connector LSX and Lotus Enterprise Integrator can use this reference guide.





---

## Chapter 2

# LCTEST and CONTEST

This chapter provides information about LCTEST and CONTEST, two programs provided for testing system and application connectivity to external data sources.

---

### Overview

LCTEST is a program that tests system connectivity to external data sources. CONTEST is an additional connector testing program, similar in concept to the connector-specific test program LCTEST.

### Supported Data Sources

LCTEST and CONTEST test system connectivity to the following supported data sources:

- DB2
- EDA/SQL
- ODBC
- Oracle 7
- Oracle 8
- OLE DB
- Sybase

---

### LCTEST

Before running LCTEST, you must have the appropriate software installed on the Domino host for each data source you want to test. The remaining chapters of this manual provide information about the software required for each of the supported data sources.

### LCTEST Syntax

The syntax for using LCTEST is as follows:

`[n]lctest`

## Running LCTEST

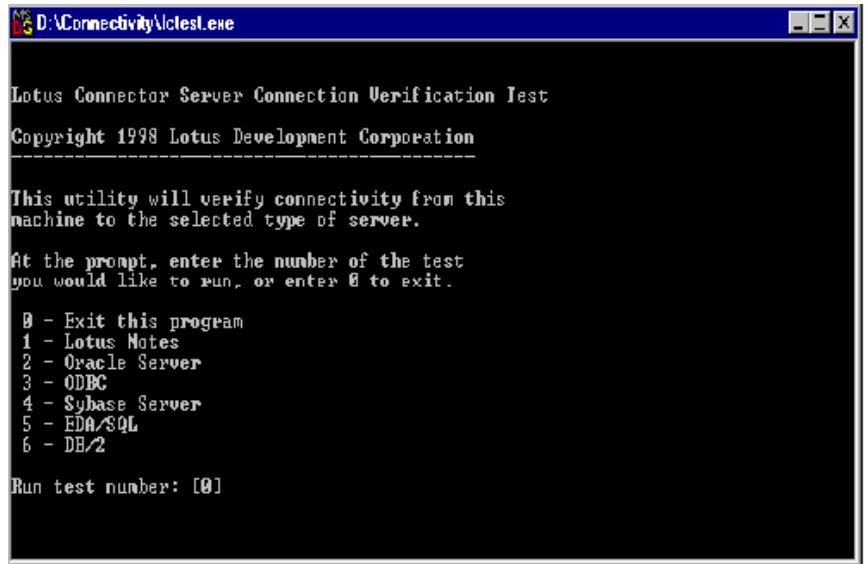
Follow the steps below to run LCTEST.

1. Locate the LCTEST program specific to your operating system platform in the Domino program directory. The LCTEST program has the following names for each of the associated operating system platforms:

- All Windows (Win32) platforms — nlctest.exe
- All UNIX platforms — lctest

**Note** Because UNIX is case-sensitive, enter the LCTEST program name using lowercase characters when working on the UNIX platform.

2. Double-click the program name to launch it, or type the program name at the system prompt. The LCTEST screen appears, as shown below.



```
D:\Connectivity\lctest.exe

Lotus Connector Server Connection Verification Test
Copyright 1998 Lotus Development Corporation
-----
This utility will verify connectivity from this
machine to the selected type of server.

At the prompt, enter the number of the test
you would like to run, or enter 0 to exit.

0 - Exit this program
1 - Lotus Notes
2 - Oracle Server
3 - ODBC
4 - Sybase Server
5 - EDA/SQL
6 - DB/2

Run test number: [0]
```

3. Enter the number of the test you want to run and press Enter. Depending on the type of data source you are testing, you are prompted to enter additional information as required to log in to the specified data source. For more information, refer to the chapter in this manual that discusses the specific data source for which you want to test connectivity.

**Note** Testing an ODBC connection with LCTEST can provide you with information regarding the minimum version and conformance level required of ODBC drivers so that they work with LEI; however, to get this information you must respond with Yes (Y) when LCTEST prompts you for a full report.

---

## CONTEST

CONTEST must be run with a running LEI server. CONTEST attempts to connect using connections defined in the currently running LEI server's Administrator database. CONTEST tests the ability to make a connection through the information found in the connection document.

### CONTEST Syntax

The syntax for using CONTEST is as follows:

```
[n]contest [Options] <connection1>  
<connection2>...<connectionn>
```

[Options] – denotes the optional parameter: -p. This parameter displays the connector properties.

<...> – denotes actual connection names (use quotation marks if spaces exist in the connection names).

Typing [n]contest with no input parameters results in Help information being displayed.

### Running CONTEST

Follow the steps below to run CONTEST.

1. Locate the CONTEST program specific to your operating system in the Domino program directory. The CONTEST program has the following names for each of the associated operating system platforms:
  - All Windows (Win32) platforms — ncontest.exe
  - All UNIX platforms — contest

**Note** Because UNIX is case-sensitive, be sure to enter the CONTEST program name using lowercase characters.
2. Type the program name at the system prompt. CONTEST runs in a command window.
3. Information about the connection displays when you use the optional parameter -p. Also, when you enter [n]contest without the parameter, only information about the successfulness of making the connection displays.

### Examples using CONTEST on a UNIX Platform

Example 1:

```
C:\LEI>contest "NotesDb on MyOracle"
```

Sample Output:

Testing NotesDb on MyOracle

dummy1 on MyOracle Connect Successful

Example 2:

```
C:\LEI>contest "Oracle on MyOracle " "Sybase 11 on
MySQLServer"
```

Sample Output:

Testing Oracle on MyOracle

Oracle on MyOracle Connect Successful

Testing Sybase 11 on MySQLServer

Sybase 11 on MySQLServer Connect Successful

---

## Chapter 3

# DB2 Connectivity

This chapter provides instructions and information for setting up and testing connectivity to DB2.

---

### Requirements for DB2 Connectivity

Connectivity software requirements depend on the operating system platform and the universal database of the DB2 version that you are using.

- IBM eNetwork Communications Server for your operating system platform (see [www.software.ibm.com/enetwork/commserver](http://www.software.ibm.com/enetwork/commserver) for more information)
- DB2 Enterprise Edition
- or
- DB2 CAE (Client Application Enabler) Version 2.1.2 or later

In addition, to connect to DB2 on an AS/400 or mainframe, a DDCS gateway must be installed.

No additional software is required on the AS/400. DB2/400, part of the base operating system on the AS/400, can be both the target of DB2 connection requests from other platforms such as NT, AIX, etc., as well as request DB2 connections to other DB2 databases in the network. Starting with V4R2 on the AS/400, DB2/400 supports both SNA and TCPIP connections. See the section entitled “Connecting to Remote DB2 from AS/400” later in this chapter for more details.

---

### DB2 Connectivity Test

You should test for connectivity to the DB2 servers. To test for connectivity:

1. Run the version of the test program LCTEST, located in the Domino program directory appropriate to your operating system. See Chapter 2 for more information.
2. Select DB2 from the program menu.

3. When the program prompts for a DB2 database, user name, and password, enter valid connection information. The database must be cataloged in the DB2 database directory. (Refer to your DB2 Client documentation for further information on configuring a connection to a database.)
4. After entering the DB2 database, user name and password, the program attempts to connect to the DB2 Server. A message appears, telling if the test was successful or not.
5. You can retry a connection by entering Y at Try Again? [N]. This provides the opportunity to re-enter all of the required information, in case a mistake was made in spelling or you entered the wrong database, user name, or password.

---

## Server Connectivity to DB2

This section provides information about software required to connect to DB2. This information is provided to help you get started. You should refer to the documentation for the specific software you are using for complete instructions.

IBM is currently shipping DB2 UDB Version 5. The specific product to use will depend on your environment.

Here is a brief listing of connectivity software available with DB2 Version 5:

- DB2 Workgroup Edition: Includes Client Pack CD for client connectivity, but does not include support for MVS/ESA, OS/390, OS/400, VM and VSE.
- DB2 Enterprise Edition: Includes all the functionality of DB2 WorkGroup Edition, plus support for host connectivity providing users with access to DB2 databases residing on host systems including MVS/ESA, OS/390, OS/400, VM and VSE.
- DB2 Client Application Enabler: Enables a client workstation to access the DB2 Server. Refer to DB2 documentation for supported platforms.
- DB2 Universal Database Personal Edition: Formerly know as DB2 Single Server. Enables you to create and use local databases, and to access remote DB2 databases. Available for Windows 95/98/2000 and NT.
- DB2 Connect Enterprise Edition: Formerly know as DDCS Multi-User gateway. Provides access from clients on the network to DB2 databases that reside on hosts such as MVS/ESA, OS/390, OS/400, VM and VSE.

- DB2 Connect Personal Edition: Formerly known as DDCS Single-User. Provides access from a single workstation to DB2 databases residing on hosts such as MVS/ESA, OS/390, OS/400, VM and VSE. This product is only available for Windows 95/98/2000 and NT.

Refer to the documentation provided with IBM DB2 Universal Database (the manual entitled “Road Map to DB2 Programming”, Appendix A, “About DB2 Universal Database”).

## **Connectivity to DB2 on AS/400**

### **Direct DB2/400 Connectivity**

The DB2 Connect Personal Edition is the only required DB2 software for connectivity. There is no need for a DB2 Client such as DB2 CAE.

### **One Server Connecting to DB2/400**

Install IBM DB2 Connect Personal Edition Version 5 on the Server machine.

If using SNA as your connection protocol, bundled with Connect Personal Edition is an SNA Server. Install the SNA Server with the SNA over APPC option. It must be over APPC; the AS/400 requires APPC for DB2 connectivity when using an SNA connection. Also, in this stand-alone environment the SNA over APPC is self-sufficient; there is no general network need for APPC and SNA in the network. If your AS/400 is V4R2 or newer, you can also use an \*IP connection.

Refer to the *IBM DB2 Connect Personal Edition Quick Beginnings Version 5* document (numbered S10J-8162-00) as a means to begin the installation. Use a user name and password that are a user name and password on the DB2/400. This will allow the installation to perform operations on the AS/400 without intervention.

This option does not require the installation of software to the AS/400.

### **Multiple Servers Connecting to DB2/400**

Install IBM DB2 Connect Enterprise Edition Version 5.

This will install a gateway to DB2/400. A gateway allows access to the DB2/400 data from multiple Servers. This software is only necessary if you plan to have more than one Server.

If using SNA as your connection protocol, the Connect Enterprise Edition does not come with bundled SNA software, so it is up to the user to install an SNA Server, such as Microsoft's SNA Server or the OS/2 Communication Manager software. If your AS/400 is V4R2 or newer, you can also use an \*IP connection.

If the DB2 Connect Enterprise Edition is not installed on the machine, then a DB2 Client such as DB2 CAE needs to be installed onto the machine. This client is needed to perform the direct connection from the Domino Server to DB2.

This option does not require any software installed to the AS/400.

#### **Server Connecting to DB2/400 with DDCS**

- Requirements: Installed DDCS and SNA Server.

This option is for customers with an existing DDCS installation. This option only exists for customers who have DDCS already in house, because at this time only the latest DB2 Connect Version 5 software is available for purchase.

DDCS Single User or Gateway can be used to connect to DB2/400. With DDCS, there is also a requirement for an SNA server over APPC. Therefore, you will need SNA software such as Microsoft SNA or OS/2 Communication Manager.

If DDCS is not installed on the Server machine, then a DB2 Client such as DB2 CAE needs to be installed on the Server machine. This client is needed to perform the direct connection from the Server to DB2/400.

This option does not require any software installed to the AS/400.

#### **Connecting to Remote DB2 from AS/400**

All connections originating from the AS/400 to DB2 databases (including the local DB2/400), require that the target DB2 database be registered in the Relational Database Directory on AS/400. You do this using the WRKRDBDIRE CL command. With V4R2, you can register your remote connections as either \*SNA or \*IP. If using SNA, you will need to do additional communication configuration to connect to the remote database and you should look in the appropriate AS/400 documentation. If you use \*IP, you must provide the target IP address or remote location name and verify that the target database is up and listening on the necessary port. The default port for \*DRDA is 446, but you can provide another port number if necessary.

If the target database is another DB2/400 and the requesting platform is an AS/400 or any other DRDA request platform and you are using \*IP connection, you must make sure that the necessary job on the other AS/400 is listening for the connection request. This occurs by doing a STRTCPSVR \*DDM on the target AS/400. This starts the QRWTLSTN job on the AS/400 in QSYSWRK. This job listens on DRDA port 446.

Also note that if you are connecting to a remote DB2/400, the password in the connection document should be in upper case.



## ODBC DB2/400 Connectivity

Several software packages support connectivity to DB2/400 through ODBC. The preferred approach to connectivity is through the DB2 Client. This gives the Server the advantage of straight connectivity, speed and datatype access without the ODBC layer. However, should a user prefer to install such products as IBM's Client Access for AS/400, then the connectivity would be through the ODBC Link.

Be certain to verify the requirements of the individual packages; in most cases an SNA Server is still a requirement.

This option may or may not require additional software installed to the AS/400.

---

## Connection for DB2 CAE and DDCS

LEI offers native connectivity to DB2. This provides a direct connection to DB2 on all DB2-supported platforms, and enhances the DB2 connectivity previously provided through ODBC. The native interface offers improvements in speed and support for native datatypes not accessible through ODBC. This section contains information on configuring native DB2 connectivity through DB2 CAE and DDCS.

### Getting Started

Network communications programs must be installed to the Server and the DB2 system to establish a network connection for data transfer. Depending on the platform you are using to operate the Server, and the operating system used to store DB2, your requirements are either to install CAE/2 (Client Application Enabler/2) or DDCS (Distributed Database Connection Services). These communications products are available from IBM. The machines must have connectivity through the DB2 CAE (Client Application Enabler) or other DB2 run-time environment (i.e., DB2 Server). CAE/2 must be Version 2.1.0 or above and must be native for the operating system it is running on (there is a separate version available for Windows NT).

For DDCS for Windows NT to access DRDA Application Servers such as DB2 for MVS/ESA, DB2 for VSE and VM, and DB2 for OS/400, the APPC protocol support must also be installed on your system. The program required to do this is Microsoft SNA Server Version 2.11 or later.

Before attempting to connect, verify connectivity through the DB2 Command Line program (supplied with DB2) or the LCTEST connectivity test program, described at the start of this section.

## Sample Steps for DB2 CAE Configuration

The following illustrates some sample steps you may wish to follow when configuring your DB2 connectivity. For full details, refer to the DB2 manual “Install/Use DB2 Clients for xxx” where xxx is your operating system. The steps below assume you are installing the CAE for the Server machine running on Windows NT and are using TCP/IP. Note that you must install CAE Version 2.1 or above. The steps will be much the same if you instead install the DB2 Server on this machine.

1. Install the DB2 CAE software.
2. Ensure the Server machine can resolve the DB2 Server TCP/IP host address (i.e., you should be able to ping the server). If it can't, you need to either have the Domain Name Server updated to include the DB2 Server name and address or add an entry to your Server machine's hosts file. On Windows NT, you must manually edit the etc/hosts file (NT: c:\winnt35\system32\drivers\etc\hosts) and add an entry such as 9.21.15.235 tcphost.
3. Ensure the DB2 Server has enabled the TCP/IP protocol through the DB2COMM environment variable. This variable may indicate multiple protocols. Make certain it includes “TCPIP”. This variable must be set at the time the DB2 Server is started.
4. Ensure the services file on the DB2 Server machine contains an entry for TCP/IP support for each database manager instance you plan on accessing. A second entry is required to support TCP/IP interrupt from DB2 V1.x Client and is not required if all your clients are V2.0 or above.

```
db2inst1c 3700/tcp # DB2 connection service port for V1
and V2.
```

```
# Also serves as an interrupt
```

```
# connection service port for DB2 V2.
```

```
db2inst1i 3701/tcp # DB2 interrupt connection service
port
```

```
# for V1.x client releases
```

where db2inst1c is the value of the service\_name parameter, db2inst1i is arbitrary. 3700 and 3701 are the port numbers for the connection and interrupt port, and TCP is the protocol. The port number 3700 is arbitrary, but must be unique within the file. The second port number must also be unique, and equal to the first number plus one. These same numbers must be used when configuring the services file on the Server machine (step 6).

5. On the DB2 Server, ensure that the database manager is listening for connections for the DB2 instance. This is done by issuing the following command from the DB2 command line processor at the server:

```
UPDATE DATABASE MANAGER CONFIGURATION USING SVCENAME
db2inst1c
```

In this example, db2inst1c is the service name.

For the changes to take effect, restart the database manager at the Server (issue db2stop and db2start in succession at the server).

**Note** The SVCENAME used must match the service name configured in the services file on both the Client and the Server.

6. Ensure the services file on the Server machine contains an entry matching the entry on the DB2 Server. Depending on the version of DB2 Server you are connecting to, you need one or two entries in the services file:

```
db2inst1c 3700/tcp
# DB2 connection service port for V1 and V2.

# Also serves as an interrupt

# connection service port for DB2 V2.

db2inst1i 3701/tcp
# DB2 interrupt connection service port

# for V1.x client releases
```

**Note** You only need the first entry if you are connecting to a DB2 Version 2 server. This must match the service name entry in the server's services file.

You need both entries if you are connecting to a Version 1 DB2 server. These entries must match the corresponding server entries. The service name, port number (3700 and 3701 in our example) and protocol must be identical.

**Note** On the Server machine, catalog the DB2 Server and Database. To catalog the server, use the DB2 command line processor on the Server machine and enter the command:

```
CATALOG TCPIP NODE nodename REMOTE hostname SERVER
servicename
```

where nodename is a name you pick to refer to this connection, hostname is the TCP/IP name of the DB2 Server machine, and servicename is the instance name you entered in the services file (you only need to do this once using the first port even if you also entered an interrupt connection service port in the services file).

7. Next, catalog the database using the following command:

```
CATALOG DATABASE databasename AS local_database_alias AT  
NODE nodename
```

where databasename is the name of the database on the DB2 Server, local\_database\_alias is a name you pick which you will use to connect to the database from the Server machine, and nodename is the name you used in the previous CATALOG TCPIP command.

8. Exit and restart the DB2 command line processor. Try connecting to the DB2 database with the command:

```
CONNECT TO local_database_alias USER username
```

where local\_database\_alias is the alias you cataloged and username is a valid DB2 username.

9. You may now verify that will have connectivity to DB2 by running the LCTEST.EXE program found in the Domino program directory. This program will prompt you for the database name (local\_database\_alias), userid, and password.

### **When to Use IBM Distributed Database Connection Services (DDCS)**

DDCS has been replaced by DB2 Connect Personal Edition and DB2 Connect Enterprise Edition. The following information is provided for environments which may not yet have acquired either of these new connectivity packages.

When connecting to DB2 for MVS/ESA, DB2 for VSE and VM(SQL/DS), or DB2 for OS/400, you can use DDCS. DDCS can also be used to connect to any other DB2 Server (e.g., NT, AIX, etc.), but it is more direct and efficient to go from the local machine using CAE directly to the DB2 Server.

It does not matter where DDCS is installed as long as the Domino Server machine can connect to the DDCS machine through TCP/IP, SPX or any other DB2 supported protocol.

Refer to the DDCS Install/Configuration document for instructions and software requirements. Connections to external systems may require additional communications software.

### **Sample Steps for Using DDCS**

As an example of how DDCS would work with the Server, let's assume the following:

The Server is running on a Windows NT machine called NP1. This machine has DB2 CAE for Windows NT installed and will connect to the DDCS workstation using TCP/IP. DDCS is installed on an AIX machine called DB2GW. It also has TCP/IP and IBM Communications Server installed.

Connectivity to a DB2 database on the MVS machine MVS1 is desired and will be made through APPC.

1. The connectivity between DB2GW and MVS1 must be established through DB2GW's IBM Communications Server and MVS1's VTAM. The details of this configuration and configuration at the MVS host are not covered here; refer to the DDCS Install/Configuration manual for information.
2. MVS1's node and database is cataloged at the DDCS machine. The following commands are issued to catalog the remote node and database:

```
CATALOG APPC NODE db2node REMOTE db2pic SECURITY PROGRAM
```

where db2node is a name you pick to refer to this host, db2pic is the Symbolic Destination Name you defined when you configured MVS1 in the IBM Communications Server.

```
CATALOG DATABASE db2db AS mydb AT NODE db2node  
AUTHENTICATION DCS
```

where db2db is the MVS database name, mydb is the database alias, and db2node is the node defined in the previous command.

3. The services file on the DDCS machine (DB2GW) is modified to include an entry for a database instance (inst1c) and an interrupt connection (inst1i). The following DB2 command must be used to tell the database manager to listen for connections to the instance from remote clients.

```
UPDATE DATABASE MANAGER CONFIGURATION USING SVCENAME  
inst1c
```

4. The environment variable DB2COMM is set to TCPIP. DDCS is started with the operating system command DB2START.
5. Connectivity from NP1 is established through the DB2 CAE by defining the target database:

```
CATALOG TCPIP NODE gw1 REMOTE db2gw SERVER inst1c
```

```
CATALOG DATABASE mydb AS mvbdb2 AT NODE gw1
```

where gw1 is the alias that will refer to the DDCS Gateway and will be used by the Server, db2gw is the TCP/IP name of the DDCS Gateway machine, and inst1c is the service name defined in step 3 above. The mydb alias is defined in step 2 above; mvbdb2 is the alias that will be used by LEI.

## **MDI Gateway**

LEI includes built-in support for the use of an MDI Gateway with DB2. MDI Gateway is a Sybase product that enables Sybase clients to access DB2 data.



---

## Chapter 4

# EDA/SQL Connectivity

This chapter provides information about setting up connectivity to an EDA/SQL data source.

---

### Requirements for EDA/SQL Connectivity

- The EDA/Client software for the host operating system. The EDA/Client version must be Release 3.2 or later and must be 32-bit on Windows NT.
- An EDA Server on the platform where the EDA-supported database resides.
- Connectivity to the EDA server.

---

### EDA/SQL Connectivity Test

The EDA connectivity test checks connectivity between EDA and the database. To test for connectivity:

1. Run the test program LCTEST, located in the Domino program directory that is appropriate to your operating system. See Chapter 2 for more information.
2. Select EDA/SQL from the program menu.
3. Enter the EDA Server, user name, and password as prompted. The program then attempts to connect to the EDA data source.
4. A message appears indicating whether the test was successful or not. You can retry a connection by entering Y at Try Again? This provides the opportunity to re-enter all of the required information, in case a mistake was made in spelling or you specified the wrong user name, password or EDA Server.





---

## Chapter 5

# ODBC Connectivity

This chapter provides information about setting up connectivity an ODBC data source.

---

### Requirements for ODBC Connectivity

- The ODBC driver appropriate to the operating system. (Lotus recommends Merant dataDirect ODBC 3.5.)
- The driver must be 32-bit on Windows NT.
- The ODBC driver must be thread-safe.
- The ODBC Administrator must be present.
- The ODBC Administrator must contain correctly defined and configured ODBC data sources.
- All client software required to connect to the ODBC data sources must be installed and configured correctly.

### ODBC Connectivity Test

1. The ODBC connectivity test checks connectivity between ODBC and the database. To test for connectivity, complete the following steps:
2. Run the version of the test program LCTEST, located in the Domino program directory, appropriate to your operating system. See Chapter 2 for more information.
3. Select ODBC from the program menu.
4. Enter the data source, user name, and password when the program prompts for them.
5. Choose (Y/N) whether or not you want detailed driver information.

**Note** Testing an ODBC connection with LCTEST can provide you with information regarding the minimum version and conformance level required of ODBC drivers so that they work with LEI, however, to get this information you must respond with Yes (Y) when LCTEST prompts you for a full report.

6. You can produce a printed report for diagnostic purposes. When asked, you can choose to output to a file (Y) or not (N). If you do not choose output to a file, the results appear on your monitor.
7. If you chose file output, supply a name for the file, then press Enter. The program then attempts to connect to the ODBC data source.
8. You can retry a connection by entering Y at Another Data Source.

---

## Chapter 6

# Oracle 7 Connectivity

This chapter provides information about setting up connectivity to an Oracle 7 Server.

---

### Requirements for Oracle 7 Connectivity

- With a Windows NT-based Server: Oracle 7 SQL\*Net version 1 or 2.
- In either case, SQL\*Net must be same version as SQL\*Net installed on the Oracle 7 data server. A network connection must exist between the Server machine and the Oracle 7 data server machine via SQL\*Net.
- Native Oracle 7 connectivity support requires Oracle version 7.2 or later.
- Oracle 7: Enterprise Integrator links with Oracle 7.2 libraries, which use SQL\*NET for the communications layer. If you are using Oracle 7 with Enterprise Integrator, you must install Oracle 7 SQL\*NET. You can use SQLNET Easy Config utility to configure SQL\*NET.
- When connecting from an Oracle 7 client to an Oracle 7 server, use of Oracle 7 SQL\*NET may be required. If you encounter access problems, install SQL\*NET.

---

### Oracle 7 Connectivity Test

You should test for connectivity between the Domino Server and the Oracle 7 servers. Complete the following steps to test connectivity:

1. Run the version of the test program LCTEST, located in the Domino program directory appropriate to your operating system. See Chapter 2 for more information.
2. Select Oracle 7 Server from the program menu.
3. When the program prompts for an Oracle 7 user name, password, and Connection String, enter a valid username and password.
  - The Connection String can be for either SQL\*Net V1 or SQL\*Net V2, depending on what software you have configured on your Oracle 7 Server and Domino Server.

- The general format for a V1 string is  
network\_prefix:server\_name:sid.
  - The format for V2 consists of a single identifier, service\_name.
  - Refer to your Oracle 7 SQL\*Net documentation for further  
information on the format of Connection Strings.
4. After entering a User Name, Password, and Connection String, the  
program attempts to connect to the Oracle 7 Server.
  5. A message appears telling whether the test was successful or not. You  
can retry a connection by entering Y at the Try Again? [N] prompt. This  
provides the opportunity to re-enter all of the required information, for  
example if you misspelled an entry or entered the wrong user name,  
password or Connection String.

---

## Chapter 7

# Oracle 8 Connectivity

This chapter provides information about setting up connectivity to an Oracle 8 Server.

---

### Requirements for Oracle 8 Connectivity

- With a Windows NT-based Server: Oracle 8 Client.
- Native Oracle 8 connectivity support requires Oracle Client Version 8.0.5 or later.

To obtain all of the functionality available with the Oracle 8 connector, you must be connecting to an Oracle 8 Client version 8.0.5 – 8.i and have an Oracle Server version 8.0.3 – 8i.

See Appendix B of the *Lotus Enterprise Integrator Domino Connector LotusScript Extensions Guide* for a list of properties for the Oracle 8 connector.

---

### Oracle 8 Connectivity Test

You should test for connectivity between the Domino Server and the Oracle 8 servers. Complete the following steps to test connectivity:

1. Run the version of the test program LCTEST, located in the Domino program directory appropriate to your operating system. See Chapter 2 for more information.
2. Select Oracle 8 Server from the program menu.
3. When the program prompts for an Oracle 8 user name, password, and Service Name, enter a valid user name and password.
4. After entering a user name, password, and Service Name, the program attempts to connect to the Oracle 8 Server.
5. A message appears telling whether the test was successful or not. You can retry a connection by entering Y at the Try Again? [N] prompt. This provides the opportunity to re-enter all of the required information, for example if you misspelled an entry or entered the wrong user name, password or Service Name.

---

## Oracle on AIX Platform

The Oracle connector `oracle.lcx` that ships with LEI 3.x and Domino 4.6.5 was compiled and linked on an AIX 4.1 operating system. If you are using Oracle 7.x on the AIX 4.3 platform, you must upgrade to Oracle 8.0.3 or 8.0.5.

You may need to relink the Oracle Client libraries after upgrading the AIX Operating System, or installing AIX Operating System patches. Refer to your Oracle Client installation guide for complete details.

### Performing Initial Connectivity Tests

This section describes how to perform initial connectivity tests using the Oracle client software (`sqlplus`).

1. Without any Domino or LEI involvement, confirm that a connection to the Oracle server can be made and that a simple SQL statement can be executed. For example:

```
cd $ORACLE_HOME/bin
sqlplus <username>/<password>@<host string>
select * from emp;
```

From the Domino program directory, run the `LCTEST` program. You will be prompted for username, password and host string. This will test system connectivity to the back end.

From the LEI program directory and with the LEI server running, run the `CONTEST` program. Use the syntax “[n]contest -p <Oracle connection name>”. This will test an Oracle connection as defined in LEI.

If the initial connectivity test fails, proceed to step 2 below.

2. Confirm that the environment is correctly set.

The environment needs to be set up for the correct user:

- For DECS, this would be the user who started the Domino server.
- For LEI, this would be the user who started the LEI server.

To view the environment type “set” and scroll to the particular environment variable (UNIX-specific).

- `ORACLE_HOME` — Set to the directory where the Oracle software will be installed
- `LIBPATH` — Set to include `$ORACLE_HOME/lib`

If these environment variables have now been corrected, return to step 1 above and confirm connectivity.

If the environment is correctly set but you are still unable to load the Oracle connector, proceed to step 3 below.

3. Determine that the shared library can be properly loaded.

On the AIX platform, the ldd is a public domain program not installed with the OS. Although most users do not have it, it is freely available on the Web. Running ldd will cause the linker to load the library, find the shared object, and resolve the linkage. If you want to attempt to verify with ldd, you can use ldd on oracle.lcx. This will indicate any problems with resolving dependencies. The default Domino install directory is:

```
/opt/lotus/notes/latest/ibmpow
```

To determine if the shared library can be loaded, enter the following:

```
[/opt/lotus/notes/latest/ibmpow] ldd oracle.lcx
```

If the library can successfully load, you'll see a list of its dependencies:

```
liblcapi.a
/usr/lib/libodm.a(shr.o)
/usr/lib/libc_r.a(aio.o)
/usr/lib/libpthreads.a(shr_comm.o)
/usr/lib/libpthreads.a(shr.o)
/usr/lib/libpthreads_compat.a(shr.o)
/home/oracle803/lib/libclntsh.a(shr.o)
oracle.lcx
/usr/lib/libcrypt.a(shr.o)
/usr/lib/libc.a(shr.o)
```

If the library cannot load successfully, this may identify where the dependencies are failing. Confirm that these dependencies exist.

If libraries cannot be properly loaded or DECS and LEI RealTime activities fail, then the Oracle client libraries may be improperly linked. Also, if crashes are experienced when using RealTime( LEI or DECS) or during a threaded program, the problem could be an improperly linked Oracle installation. If any of these occur, see the next step.

4. Determine if the libraries are properly linked.

Change to the directory containing the Oracle libraries:

```
cd $ORACLE_HOME/lib
```

Enter:

```
dump -H libclntsh.a
```

Output of incorrectly linked library:

```
Dump of improperly linked libclntsh
```

```
$ dump -H libclntsh.a
```

```

Libclntsh.a[shr.o]:
***Loader Section***

Loader Header Information

VERSION# #SYMTABLEENT #RELOCENT LENIDSTR
0x00000001 0x000003b9 0x00002a84 0x00000065
#IMPFILID OFFIDSTR LENSTRBTL OFFSTRBTL
0x00000004 0x000257a8 0x00001a91 0x0002580d
***Import File Strings***

INDEX PATH BASE MEMBER

0 /local/rdbms/oracle805/lib:/usr/lib:/lib
1 libc_r.a shr.o
2 libpthread.a shr_xpg5.o
3 libc_r.a aio.o

```

Output of correctly linked library

```
$ dump -H libclntsh.a
```

```

Libclntsh.a[shr.o]:
***Loader Section***

Loader Header Information

VERSION# #SYMTABLEENT #RELOCENT LENIDSTR
0x00000001 0x000003b9 0x00002a84 0x00000067
#IMPFILID OFFIDSTR LENSTRBTL OFFSTRBTL
0x00000004 0x000257a8 0x00001a91 0x0002580f
***Import File Strings***

INDEX PATH BASE MEMBER

0 /local/rdbms/oracle805/lib:/usr/lib:/lib
1 libc_r.a shr.o
2 libpthread_compat.a shr.o
3 libc_r.a aio.o

```

After installing the Oracle client, the library may report as being incorrectly linked.

To re-link: Be sure ORACLE\_HOME is set:

```
ORACLE_HOME=<root of Oracle installation>
```



Point to the Posix Draft 7 libraries for re-linking:

```
export LINK_CNTRL=L_PTHREADS_D7
```

Run:

```
$ORACLE_HOME/bin/genclntsh
```

Confirm that libclntsh.a is correctly linked. Change to the directory containing the Oracle libraries:

```
cd $ORACLE_HOME/lib
```

Enter:

```
dump -H libclntsh.a
```

The “Oracle8 Installation Guide for AIX-based Systems” can be found at the following URL:

```
Http://technet.oracle.com/docs/products/oracle8/doc_index.htm
```

**Note** If installing LEI with RealTime enabled, you must restart the Domino server to access the new notes.ini setting:

```
EXTMGR_ADDINS=decsext,libleiext.a
```



---

## Chapter 8

# OLE DB Connectivity

This chapter provides information about setting up connectivity to an OLE DB data source.

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### Requirements for OLE DB Connectivity

This section reiterates the standard LEI platform supports as well as includes requirements unique to the OLE DB connector for both LEI and DECS.

- Microsoft Data Access Components (MDAC) 2.0 or higher is required. MDAC 2.5 is recommended; the latest version is available for download from <<http://www.microsoft.com/data>>. MDAC 2.5 can be installed on Windows 95, Windows 98, Windows NT 4.0, and is included in Windows 2000.
- Microsoft SQL Server Version 7.0 is required. SQLOLEDB, the Microsoft SQL Server OLE DB provider is currently the only supported OLE DB provider.
- The preferred Net-Library can be set by the SQL Server Client Network Utility. Alternatively the Net-Library can be specified in the Provider String when making a connection.

The Lotus Domino Connector for OLE DB can be used with the following Lotus Enterprise Integration products:

- Domino Enterprise Connection Services (DECS) — To use this connector with DECS, you must have either Domino Server Release 5.0.1 or greater or Domino Server Release 4.6.3 or greater.
- Lotus Enterprise Integrator (LEI) 3.0 or higher — To use this connector with LEI you must have either Domino Server Release 5.0.1 or greater or Domino Server Release 4.6.3 or greater.

- Lotus Connector LotusScript Extensions — The LSX enables programmatic, native access and manipulation of Lotus Domino Connector source data, allowing full programmatic control over data transfer. All supported Domino connectors use the same Lotus Connector API object model, exposed in LotusScript classes, to syntactically access a variety of enterprise data sources. The Lotus Connector LSX ships with the Domino Server (Release 4.6.3 or greater) and Lotus Enterprise Integrator 3.0 and greater.

If you use the OLE DB connector with LEI, your machine must have Domino Release 4.6.3 or higher and LEI 3.0 or higher. If you use the OLE DB connector with DECS, your machine must have Domino Versions 4.6.3 and higher.

---

## OLE DB Connectivity Test

To test for connectivity complete the following steps:

1. Run the version of the test program LCTEST, located in the Domino program directory appropriate to your operating system. See Chapter 2 for more information.
2. Enter the test number when you are prompted for it. For OLE DB, enter the number 7.
3. Enter the Provider Name, Data Source, Provider String, Authentication Service, Username and Password when you are prompted for them.

The following is an example of the information that is returned when you have a successful connection.

---

## Chapter 9

# Sybase Connectivity

This chapter provides information about setting up connectivity to a Sybase Server.

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### Requirements for Sybase Connectivity

- System 11 or System 10 Netlib.
- A network connection must exist between the Domino Server and the Sybase SQL Server using Netlib.

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### Sybase Connectivity Test

You should test for connectivity between the Domino Server and the Sybase SQL Server servers. Complete the following steps to test for connectivity:

1. Run the version of the test program LCTEST, located in the Domino program directory, appropriate to your operating system. See Chapter 2 for more information.
2. Select Sybase Server from the program menu.
3. Enter the server name, user name, and password as prompted. The test program then attempts to connect to the Sybase SQL Server machine.
4. A message appears telling whether the test was successful or not. You can retry a connection by entering Y at Try Again? [N]. This provides the opportunity to re-enter all of the required information, in case a mistake was made in spelling or you gave the wrong user name, password or server name.
5. If problems persist, check to make sure that the client software is properly installed.







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